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WHITHER THE PEGASUS OF PUBLIC HEALTH?*

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TWO preoccupations require the attention of anyone responding to the call for such a lecture as the present opportunity demands. Regard for the intellectual and personal contributions of one's predecessors in this thirty-year series will create a proper humility of spirit. A hope to meet the long-ago wishes of the founder of the lectureship should provide the courage or perhaps explain the recklessness of one who presumes that he has a message worthy of such an academic and professional audience.

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Whereas the original Pegasus of Greek legend seems to have been the only offspring of Neptune and the golden-haired Medusa whom Minerva so cruelly punished for the sea god's infatuation by turning her locks into serpents, ours is the winged horse on which Bellerophon rode when he slew the fabulous varibodied Chimaera that spouted fire.

The medical officer of health is modern democracy's Bellerophon, the son of Glaucus and grandson of Sisyphus, who advances upon all enemies of his fellow men on the wings of science. He is mounted on such a steed of speed and energy as will strike poetry out of the dull earth of human misery even as Pegasus of yore brought forth the fountain of the Muses, the Hippocrene on Mount Helicon, by a stamp of his hoof upon the arid rock.

Although the life history of our chosen field of scientific endeavor for society's sake is but a brief moment in the story of man, and the names of the originators of the public-health movement are few and easily recalled, I venture, instead of playing the role of thumb-nail historian, to quote two principles, or expressions of deep reasoning that seem to me to reach the essence of our problems of today and to add a sense of maturity and solidity to what has been so far a fairly successful philosophy and performance.

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Among the papers of Abraham Lincoln revealed in July, 1947, for the first time to scholars and to students of our greatest citizen, our wisest and most beloved President, a fragment in his handwriting found in his worn carpetbag may well be remembered and taken permanently to heart by all who either share in the privilege of our suffrage or play a part as employees of civil government at any level of jurisdiction. Lincoln wrote as follows:

> The legitimate object of government is to do for a community of people whatever they need to have done but cannot do at all or cannot do as well for themselves in their separate and individual capacities. In all that the people can do as well for themselves the government ought not to interfere.

Perhaps we should expend less pomp and circumstance upon a mere centennial of medical organization in our country or on the seventy-five years of the American Public Health Association's life and devote more celebration to this, the six hundred and fifty-sixth year of Switzerland's independence as an autonomous representative government of a free people. The first three Cantons in 1291 entered into a perpetual pact to safeguard their system of local self-government in opposition to the officials set up by the Hapsburgs. There are threats today against the integrity and independence of our local governments by the successors in spirit of those officials.

What treasures have been revealed to us by explorers into the secrets of nature had been but barren gifts if we had not held precious the principles of democratic freedom as a framework of our society within which the practical blossoming and fruiting of the sciences has been continuous and abundant. This has been obstructed only by the remainders of superstition, tradition and ignorance among us, and by the inertia and small-mindedness of a few here and there to whom the reins of government and the appropriation of tax money have been unsuitably entrusted. It is the supplementing of individual resourcefulness, initiative and responsibility by the collective authority, prestige and tax

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funds made available to government that constitutes a successful social partnership, not the replacement or substitution of appropriate personal interest in health by a dominance of governmental protectiveness, and directives. The simple phrases of Abraham Lincoln challenge us today to judge the conduct of our affairs, official and professional, in attempting to put the expanding sciences of medicine to work in the interest of public health.

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From the Centennial Discourse on Public Hygiene in America delivered at Philadelphia by Dr. Henry I. Bowditch in September, 1876, I offer ideas of such enduring worth as to put us deeply in the debt of one whose name is cherished for his industry and strong character in many episodes of public medical concern. In this discourse was presented for the first time a continental record of the shallowness, indifference and parsimony that characterized the public's part in health across our nation, after our first hundred years of federated existence.

The status of public opinion in each state and territory on public hygiene and "state preventive medicine" was given with clarity and precision: "Theoretically Public Hygiene is the most important matter any community can discuss, for upon it, in its perfection, depend all the powers, moral, intellectual, and physical of a state." He notes that "we and nations in Europe seem to be entering upon a career of minute and accurate study of the causes of all diseases however trivial," and he proposes that "this be done with the full power of the state, directed by experts from the professions and the sciences." Dr. Bowditch coined the phrase "state preventive medicine," and in justifying his choice of words he voiced ideas as fresh and eager today as they were novel and courageous seventy-five years ago:

> Only the State with its great resources, with a large corps of able and earnest agents occupied in the observation of the rise and progress of disease, and in the analysis of such observations for many generations, can hope to unravel even a few of the many mysterious causes of the diseases of any nation, especially of one covering so large a portion of the earth's surface as the United States. Hence, preventive medicine must be undertaken by the State, or we shall hereafter go on as hitherto, with but little success, against what may be preventable diseases.
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> Still further I hold it to be true that the study of the prevention of disease is the only branch of medical learning which the State can legitimately undertake. The practice of medicine and surgery and the appropriate use of drugs, must be left to medical schools and to private practitioners of medicine. The State, as a student of the causes of all disease, only supplements, and indeed nobly supplements, them.

In 1876 we were in the full swing of the first era of public health as we think of it — a period in which the engineer and the builder of cities, with their aqueducts and sewers, brought a great measure of safety to our formerly filthy hazards of congregate existence. This was an era of authoritarian and environmental public health, when the power of sanitary law and ordinance was used with perhaps unreasonable confidence but nevertheless with obvious beneficial results.

By 1900, or just before, there was added the phase of public health, characterized by concerted attack upon public ignorance through channels of publicity and popular information. Leadership, ingenuity and resourcefulness were developed to a high degree at the outset of this era and have been maintained to the present time by the organizations local and national devoted primarily to the control and extinction of tuberculosis.

In 1922 at the meeting of the American Medical Association in St. Louis there was launched officially the movement that may be called that of the periodic health examination, or perhaps an era of universal personal participation in life saving by individual attention to the teachings of human biology. With this emphasis on personal health guidance came what is often called the cult of positive health — a search for the practice of life at the highest levels that our inheritance permits, instead of accepting the negative attitude of health as the absence of disease.

We can look back with pride and about us today in all humility upon the factors of these three eras and their composite results. Actuaries, lawyers and lay and medical servants of civil government have started public thinking and have urged the people to take action in their own behalf, always with the practitioners of medicine of the day supplying the facts, the experience, the professional support of each forward health movement.

The marriage of medicine and government has created the offspring that is our present concern, the public-health services of today. In spite of the evident delay in putting knowledge to work in the public interest, the lag between the research-laboratory report, the clinical test, the experience of hospital and dispensary and the adoption of a policy and procedure authorized and promoted for all the people by their agent of the sciences, their local department of health, is steadily shortening, thanks to the interchange of information within the medical profession by publications that surround the world, and to the alert and sometimes too eager lay press, which rings aloud the bell of novelty so that every straphanger or subway mole knows the news of good health often before his own physician has been convinced of its authenticity.

We have more knowledge than we yet know how to make effective. We have all the authority of statute law and local ordinance with which any public agency or officer can be safely trusted.

Where shall we be going from here? Can we achieve a quantity of service that approaches the universal? Is public service for health capable of providing a quality worthy of the devotion, the cost

and the competence of contributors to the sciences of human life? We have come far. We stand on a foundation of depth and breadth. We have attained to goals but recently unbelievable. We need to study the direction of the journey before us, not only where we seem to be heading but the path we should follow.

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We are concerned primarily with a function of civil government at all four levels from local, through state and national to international, with a young, rapidly growing art of public service expanding with the sciences and involving the most intimate of social applications of human biology, of which sociology is but a part. We must consider whether and how public-health services, which consist of the application of the sciences of preventive medicine through government or with its formal authorization, can best apply their infinite potentials on the side of democracy and the ethics of Christianity, and be put to work to lead us through something of a social revolution in the pattern of human existence. We can compromise on technics but not on objectives or principles.

Whither away on the soaring wings of science in a generation captivated by space, speed and power and indoctrinated by politicians with the idea that personal and collective security is an objective compatible with a free existence? Assuming a complacent attitude, we of the United States may say with entire truth and honesty that no population mass of such dimensions as ours living under a single form of government and including races so numerous and diverse, and climates and occupations of such variety, has in the recorded history of man enjoyed such average length of life and been spared the sufferings and infirmities of so many of the diseases known to be preventable. Whatever index we may apply there is the certain evidence of considerable success at every decade of life, more at the beginning than in the later years but appreciable even in the eighties. This may be credited to economic, cultural and other good fortunes, but the causal relation between science applied to society for disease prevention and the growth and development of community health is too clearly proved by demographers and epidemiologists to be disregarded.

There are increasing public funds available for more and better public-health services and a public opinion calling loudly for ever better protection and enlightenment.

Never before were there so many and so well trained health workers at the service of the governments. The quality of their professional contributions closely approaches that of the clinicians and servants of the sick.

But turn to the deep South, to Puerto Rico, to Alaska, to the arid desert homes of our native American Indians, to the massed hordes of many races crowded and sordid in even our oldest and richest cities and you shall find sickness and premature death of a volume and variety to make you wonder if science and government have become but the privileges of the fortunate majority, with the meaning of democracy lost to any group without political or financial power. Death and sick rates soar as a community or group deviates from the majority in race, mores, earnings, housing and voting power. And furthermore there are the forty-one million average Americans who live where their local government has not yet touched them with the wand of health assistance.

Can you believe and accept the challenge of the fact that these millions of our neighbors, lacking any semblance of full-time local health departments under professionally qualified medical officers of health, are distributed among 43 of our states and in 1697 of the 3070 counties of our nation? In 1876 scarcely 5 per cent of our people had the benefit of even the most modest and but narrowly limited local health services, and the few states that had already authorized state boards or departments of health dealt with disease prevention only at arm's length and chiefly at times of epidemics. By 1922 there were about 33 per cent of the people, and by July, 1947, an estimated 66 per cent, living in communities where a full-time medical or otherwise professionally trained health officer and a staff of suitable assistants served their local health departments.

But lest we deceive ourselves about the apparently growing adequacy and competence of such widespread local health service for this 66 per cent let me caution you to test these services by the four very simple criteria of numerically sufficient doctors, nurses, sanitarians and clerks to do the necessary jobs of a local health department. Then you will find that scarcely 4 per cent of the people receive or pay for a health service through their local government that meets a modest standard of quantity and quality consistent with the teachings of our schools of public health and the opportunities for social good put into our hands by the sciences and professions concerned. Can we now look ahead and with a fair sense of proportion propose the direction and objectives of our immediate and more remote advances?

It is for the people themselves to require of their local governments such public services as constitute the accepted sextette of indispensable public-health functions, while we of the medical and related professions are concerned more directly with the leadership, conduct, quality, variety, appropriateness and results of technics contributory to these six functions. Shall we take it for granted that a measure of national self-respect — a product of statewide planning and of multitudinous foci of popular opinion and demand directed and sustained by

public-health personnel of all official and voluntary agencies — will be in the total coverage of people and areas, with local health departments, each of these to be financially supported by tax monies, staffed by qualified professional, technical and assistant personnel meeting accepted standards of competence, and serving units of population sufficient in size to justify the expense of such a staff?

This must be our least and earliest objective. Such health preparedness for peace as for any military or other emergencies is inseparable from self-determination in a democracy that survives only by superiority of the qualities of its citizens.

A few states (not more than ten) will need permissive legislation to authorize co-operation among adjacent communities for combined operation of local health services with efficiency and economy. Already interstate creation of local co-operative health departments is under consideration in the middle west and northwest. A federal act is needed, similar in principle to that of the Hospital Survey and Construction Act, to provide grants for part of the support of local health departments in impoverished areas. Such legislation would be a great help to the speed and adequacy of total local health coverage.

It may be expected that suitable state and federal enabling acts will become law not later than 1949.

With the recommended 1200 or perhaps as many as 1500 local health jurisdictions actually organized, financed and staffed to cover all our national area and population, and the presence of state, territorial and insular health departments to serve their proper supervisory, consultative, standardizing and regulatory functions, and the long awaited and still vaguely promised single federal health authority to conduct the international, interstate, research, and other health duties of the federal government, we should find ourselves, about a hundred years after the creation of the first state and metropolitan or city health departments, with at least the skeleton framework through which the spirit and official potencies of the sciences of preventive medicine can work.

Let us assume that this will be achieved and that by the mid-century we can live or travel anywhere throughout our nation and never be out of reach of the network of public-health nurses, or be exposed to neglect of water and food sanitation, or unable to meet emergencies of communicable disease, or protective immunizations, or of guidance of maternity and childhood and of occupied persons in trades and commerce, for lack of a solicitous and competent medical officer of health serving each unit of local government.

This is what seems to me to be but the beginning of public health in the United States, not its goal. Without this basic structure, this mere administrative framework of medical participation in civil government, the future of public health at state, national or even international level seems to me little but a mass of vague verbiage and lively imagination.

Two large fields of public concern to medicine already being actively cultivated will produce but rough and partial harvests until local health officers touch elbows across the continent and from Canada to the Gulf.

Hospitals as the workshops for most of the serious medical and surgical illnesses and the home of consultative specialist services for sick persons will fall within the concern, if not under the direct administrative control, of the health officer, more particularly in rural areas. It is my considered opinion that the demand for specialists in medical administration for hospitals will tend increasingly to spare the health officer trained in the sciences and technics of preventive medicine the dual burden of health-department and hospital direction in all urban, metropolitan and other large population units of local government. It does not seem to me unreasonable to expect a sort of Castor and Pollux of medical administrative officers in most of the suggested 1200 local units of population: one medical officer of health to direct the services of public or state preventive medicine, and one to represent government as a commissioner of hospitals where the concern is with the care of sickness in the individual patient, each a career worthy of the ablest but quite different skills, and prepared for by different, although interlocking, academic disciplines and practical experience.

What remains to me a mere nightmare of social confusion, incompetence and extravagant cost is some form of threatened compulsory medical-care insurance, often politically labeled health insurance. This also, if it should ever be forced upon us, must await the creation of some still but vaguely postulated administrative medical leadership; in the absence of any other in sight, this would be likely to fall with crushing weight upon local health officers already staggering under a load of demands and potential special services for health protection quite beyond the powers of personnel now available or of tax monies adequate for their present support. Suppose, then, that we are spared the catastrophe of federal-controlled, state-dominated, compulsory universal sickness or medical-care insurance, until we have matured and consolidated the promising and vigorously growing voluntary systems of hospital, and other more comprehensive plans for medical-care insurance. Suppose further that the examples of some of the great cities in creating the dichotomy of a department of hospitals and a department of health, as in New York, Philadelphia and St. Louis, is increasingly followed in other regional hospital systems and large units of local health services, then we can begin to develop quality, technic and the use of administrative epi-

demiology to test the validity of various methods or modalities of public-health power.

Already on an experimental scale, appraisals, evaluation schedules and health practice indexes have revealed the rarity of excellent health services and the abundance of mediocrity or frank inferiority.

Looking at each major function of a local health department in turn, let us have visions or actually practical aspirations for the future. In vital statistics, are we to be satisfied that our thirty-year struggle to get nation-wide birth and death registration as an end-point or but the springboard for better quality and greater usefulness of the numerical expression of human life? Confidential death certification promises a higher level of thoroughness, a greater protection against commercial and social abuse of the certificate, a rivalry in matching clinical against post-mortem evidence and a consistency in legal protection of the physician in the declaration of primary and contributory causes of death known only to him. Shall New York City's example be followed by other sanitary codes and registration practices in this respect?

Where will routine current weekly morbidity reporting be undertaken in this country? Something more medically adequate than the sampling by lay reports of illness in England is needed here. Unless budget limitations forbid, there will be instituted in 1948 a weekly report of all discharge diagnoses of patients admitted to medically staffed institutions in New York City, including hospitals and dispensaries. Properly and promptly tabulated reports of this kind should permit a quicker use of preventive measures for some of the seasonal diseases, and a fund of living data fresher and more responsive to public need than those ashes of human existence, the mortality data.

Will the stillbirth certificate be replaced by requirement of fetal-death record of any product of conception regardless of the weeks or months of pregnancy? Already useful new and unexpectedly revealing results have appeared from the past few years of fetal-death certification in New York City both in the studies of deaths from prematurity and in the ingenious application to the epidemiology of prenatal disease by Ingalls and Gordon at the Harvard School of Public Health. All aspects of human biology and the natural history of reproduction and its family and social cost are of major concern to health departments.

At the other end of life we await the institution of a library of human longevity, the registration of supplementary data of ages and causes of death of siblings and ancestors of persons dying at seventy years or over. Perhaps some registration office will find such an exploration into human gerontology possible without too great expense. Instead of speculation regarding the factors that determine some of the unusually long lives we can substitute a sum of experience that would place the individual studied in his — or more likely, her — proper place in a family setting of several generations. The genetic factors of longevity may well prove to be more potent than eating carrots or supplementing a diet with milk and wheat, or following one or another of the many current fads.

Now that it is increasingly common to have marriage and divorce records included within vital statistics of health departments, there is an obligation to delve deeper into the social disorder that affects the gracious art of married living.

The whole question of registers of the increasing list of diseases now required to be medically reported separately to the health department awaits correlation and economy of practice, whether or not general morbidity reporting is provided for. At present only by creation of special disease registers at great cost can value be obtained from existing reporting systems.

In communicable-disease control, we can safely replace much routine notification of diseases of minor importance for which we do nothing effective — for instance, chicken pox — by more significant and relevant reporting and tabulation by age and sex of other diseases, the trend of prevalence and case fatality of which can be interpreted in relation to specific measures worthy of testing. Whereas the local health officer is acutely concerned with the rabid-dog episode in the school playground, only by national or concerted continental action can any permanent impression be made on this disease, the only one communicable to man in which death always follows clinical recognition.

Among our major failures are sylvatic plague, the various endemic typhus-like fevers, trichinosis and hookworm disease, each of which demands a scale of control and large area plans quite out of the range of service of the local health officer.

There is no more pitiful picture of the impotence and ineptitude of popular enthusiasm about widely publicized disease than the fantastic promotion of unprofitable measures financed with reckless extravagance for the so-called or assumed "control" of poliomyelitis. These manifestations of newspaper or public-relations experts concerned with dime collections on a percentage basis make monkeys of honest health officers, while hysterical warnings and inflated news items inflame local fears of a disease whose prevalence or fatality no health officer has yet claimed with honesty to have modified. Voluntary agencies riding high on the emotional appeal of the dramatic deformities and sudden deaths from infantile paralysis so mask the truth and exploit the seasonally recurrent prevalence of this disease that rational education of the public regarding the state of our ignorance of effective measures is almost unheard amid the din of personalities, and of the zooming air planes that sprinkle death-dealing dust on house flies and honey bees alike.

The health officer is humiliated, his prestige is lowered before the public when daily bulletins come to the press from the hirelings of philanthropy instead of from responsible officers of the United States Public Health Service, which is the only trustworthy source of reliable information of any such epidemic disease in its nation-wide aspects.

We must put our professional house in order also in the matter of multiple antigens for the promotion of which premature optimism of producers often takes the place of controlled field experiments by epidemiologists responsible only to the people through the state and local health officer. Wait we must, for more facts from the virologists, the personal hygienists, and all and sundry sanitarians and epidemiologists before we can venture a frontal attack on the common cold, the particularly mean, almost petty and yet formidable communicable disease, which is properly and almost literally flung in our faces by a scornful and sneezing public, if in an unguarded moment we venture self-praise or suggest credit for the practical disappearance of some other diseases now largely forgotten by our neighbors who never saw them in their heyday. We could almost rest upon the record for a spell if some miracle of nice human relations brought us freedom from sneezes as the sanitary privy, clean water and pasteurized milk have spared us most of the diarrheas and enteritides. Yes, our greatest triumphs, our most mathematically provable causal relations have been in the traditional practice of separating the infected from the susceptible, and yet in moving from the sphere of local to that of international or at least intercontinental control of world-wide plagues we can promise still greater successes if we will follow the stars and the stratosphere lanes where commerce is swifter far than mythological winged horses.

For the field of environmental sanitation we have again a large and inviting future when headwork of the sanitary engineer more commonly directs, on the basis of laboratory knowledge, the footwork of the educationally minded field sanitarian. State after state will find universal pasteurization of milk practicable. Reciprocity of standards and records will put an end to duplication of inspectors and inspections of no benefit to the milk drinker. Standardization of butter fat in milk will win its way in spite of farmers' lobbies. Reconstituted milk and cream will appear in the retail stores, even if the fluid-milk barons suffer some necessary loss of control. The very logic and economy of leaving the water of milk at the point of production and replacing it where the milk is consumed will force health departments to permit sale of reconstituted milk and to protect the consumer against its commercial abuse.

Future fields of protective sanitation must await extensive research in the food value and bacterial contents of foods processed by drying, freezing and precooking followed by freezing. We shall see a wide extension of the sound administrative principle of self-inspection of food processing and serving industries, subject to qualifications of such inspections acceptable to the department of health. The City of New York once employed 500 milk inspectors upstate on the milkshed and now finds 37 sufficient, for the milk industry sees it to be to its own financial interest to meet health-department standards through supervision by its own inspectors. Similar transfer of the burden of restaurant inspection is now being practiced in New York City with favorable response to this opportunity for food purveyors to manage their sanitary as well as their dietary and esthetic affairs to public satisfaction.

Occupancy control of living premises is in the offing and calls for specific limitation of room use to prevent overcrowding. Although an alert health officer will concern himself with the problems of slum clearance and sanitary housing construction, his primary duty is to see that the use of rooms for living purposes does not exceed precisely defined limits of number, age and sex of occupants. One may properly follow the practice of some of the British Commonwealth nations, where the number of permitted bed occupants is, I understand, marked on the door frame of each room.

Shall we not look forward to a day when the air above and about us, indoors and out, is clean and free from odors and other pollutions, and the surface waters of ponds and lakes, brooks and streams are suitable for fish and safe for human beings? Esthetics and sanitation may well combine forces for popular opinion and support to return our aerial environment and surface waters to us in their original or natural states.

The largest undertaking, and one pregnant with the greatest benefit to mankind through protection of his physical envelope, is, of course, the sanitation of occupations, still in its embryonic stages under federal and state promotion but not yet included with any degree of competence or thoroughness by local health departments. Since occupations are limitless in variety and novelty of hazards, the diseases and disabilities of workers will constitute the largest and always an expanding category of preventable conditions. The opportunity of health protection appears to me at least as promising in this area as in the two large fields of nutritional and communicable diseases.

In the fourth basic function of local health departments, that of public-health laboratory service, we find perhaps the closest and quickest relation between the discoveries and explorations of the sciences and their practical application for greater usefulness to the administrator of public health and for the people he serves. One among many promising additions to public laboratory service appears to be the universal authoritative determination of

the blood types of all babies as soon after birth as possible, and the entry of this identification on the birth certificate for permanent record and reference. The state laboratory seems at present the proper origin for such an important determination, which has serious medical and social implications throughout life.

As hospitals of high standards become more widely distributed and equipped with facilities and expert personnel, they may everywhere become the outposts and collaborators of state public-health laboratory systems, as they are already, in fact, in a few states.

Where shall we look for the future in our still quite unsatisfied ambitions for the quality of the oncoming generations? Human reproduction, at last an accepted object of orderly inquiry within the scope of the National Research Council, is among the muddy and obscure topics of common understanding. Health departments, state and local, suffer in many parts of this country, and nowhere more severely than in Connecticut and Massachusetts, from powerful inhibitions that restrain through legalistic and other limitations the free flow of professional services and information sought and needed by many in the effort to manage their lives in marriage so that child-bearing may be wiser and happier.

It will not be by multitudinous official services offered for premarital or marriage counseling, for sterility or fecundity, prenatal, infant, preschool, school-child or adolescent problems or the guidance of the continuation-class youth already engaged in self-support that the future will bring results. Rather should we expect and promote personal use of the pediatrician, the applied biologist of youth, for a continuous aid to parents during the growth and development of their offspring. Health departments are better employed in studying the errors in the raising of children and making the broad facts and conclusions readily understood for lay and professional use than in becoming a sort of community foster parent.

There is no future of promise in any public service that permits or encourages a shift of responsibility for children from the home and the parents into schools and health agencies of government. It may well become a matter of pride and distinction in a community that all useful medical examinations of the child and the correction of remediable defects will have been accomplished prior to school enrollment by the services of the family physician at the request of the parents, only those children whose families are ignorant, impoverished or indifferent being the objects of public-health solicitude and service. Even now, when infant mortality approaches 25 per 1000 live births each year, there are well organized plans of obstetricians, pediatricians and health-department staffs to prevent or manage prematurity so that there may remain only the still obscure and so far nonpreventable genetic and congenital causes of such neonatal deaths as still occur.

To one born at a time when one of four children born alive died in the first twelve months, such a state of progress in salvage of the newborn smacks of perfectionism. But, after all, should we not take pride in rivaling the farmer's concern for his chicks and ducks when dollar profit is his chief incentive?

In that most important constructive social undertaking of health departments, their concern with the process and product of human replacement through the oncoming generations, public and official resources should be directed toward superiority of parenthood and to a greater wisdom about growth of body and the emotional development of all members of the family. In all of this it becomes increasingly clear that the natural history of and the wide variety within the zone of normal mental and emotional life must determine the mores, the folk-ways of parent-child relationship. Even now boards of health face the necessity of regulating artificial human insemination to prevent the commercial abuse and genetic hazards of this increasingly prevalent experiment in family development.

There remains to consider only the latest, the most rapidly exploited, the uncertain and confusing field of health education, so often a sort of camouflage name for publicity, promotion, propaganda, salesmanship or plain advertising. Long before the first bureaus of health education were included in the organizations of local and state health departments in 1912 the obligation had been well recognized to keep the public informed on matters of common concern regarding both epidemics and other temporary hazards to health and the principles of public sanitation and personal hygiene in which co-operation with public authority was solicited.

The first principle for health education is to make sure that every member of the health-department staff recognizes his role as an educator, a persuader to health, a co-operative assistant and adviser in matters of health at every opportunity that offers, from the health officer to doorman, errand boy, clerk and all professional and technical staff between.

Next is the necessity of knowing simple and truthful answers to questions likely to be asked. Of subordinate importance are the organizing of information and audiences accessible to educational effort at appropriate times and places, and an understanding of the limitations of interest and educability among the many fractions of the public within reach of the spoken or printed or pictured word.

The future holds promise already for a greater emphasis and opportunity in elementary and high-school curriculums for the teaching of the laws of living matter and their application to the conduct of individual human life. The rate of progress of

public health is necessarily set by the level of common understanding of the causes and effects, the processes and products of human physiology in terms of personal survival and social conduct. Neither virtue nor health is a necessary product of information, nor is vice a certain sequel to ignorance, but knowledge helps man escape the pitfalls of ignorance and avoid superstition and the inertia of tradition.

A valuable resource gradually being made available for small towns as well as some large cities is the health museum for visual education, a sort of temple of health, on a par of dignity, popular usefulness and aid to culture with the public library and the art museum.

Whatever is not done by the institutions devoted entirely to education to teach good sense about health from nursery classes through the university professional and graduate schools must be attempted, when of vital importance, by departments of health, if only temporarily until the needed information can be incorporated by systematic presentation in schools and colleges. The weakest phase, if not actually nonexistent for the most part, of health information through public-health agencies is that regarding the use of habit-forming drugs and self-medication with potent and hazardous sedatives, in particular the world's most recklessly used depressant, ethyl alcohol, and for the moment in this country the barbiturates. The damage to the quality of social relations, to the conduct of persons and the invariable inferiority of performance of bodily and mental functions resulting from the prevalent use of alcohol are sufficient reasons for dealing as frankly with its properties as we do with the values of cows' milk. Health officers do not dare to declare the full truth of the baleful effects of alcoholic beverages, as widely used, upon human health.

There is, besides the considerable number of opportunities for enlargement of the scope and refinement in the methods of fulfilling the existing accepted basic functions of a local health department, at least one serious defect in the present preparation of the various professional participants on its staff. We of the public-health professions lack an orderly and approved provision for field training during and after completion of the courses offered in schools of public health to physicians, sanitary engineers, public-health nurses, educators and others. State and local health departments require in-service training courses and practical field experience for each person added to their staffs. No graduate of a school of public health should be thought of as prepared for a position in a health department until he has had at least six months of supervised field training in a local health service with good standards of performance and personnel assigned to the special duty of trainee supervision.

That such training centers will be provided in the near future appears to be certain, and it may be noted here that the urgency of the need for these, and the quite unsatisfactory conditions for local rural or extra-city field training, is nowhere greater than in the New England states, and yet in these very states at present the conditions of local rural health services are not favorable for the development of such training areas.

* * *

And now I am at your mercy, having ventured to glimpse the future of public health in our time, rather as I believe it should and may develop than as some of the current trends of social promotion and political opportunism would prefer it.

Frankly, I believe it would set back the hands of time, confuse public thinking, lower the respect for "state preventive medicine" and allow people to believe that more abundant care of the sick would materially improve the public health, if hospitals and other institutions for the sick were administratively included within public-health services. Regarding the following extract from a recent report on intergovernment relations in a typical agricultural county of southern Minnesota, it may be well to understand in Massachusetts also certain facts and opinions against which we must project the future administration of local public-health services:

> The town meeting, city hall, and county court house are no longer the seat of local government. Alongside them and in their place have sprung up a large number of government agencies operating under a line of authority and responsibility that travels the long and circuitous route from the electorate to Washington and back to the locality. We may note that with this the cost has risen and the tax dollar is worn thin by its travels. The weakness of the existing system of public health administration is not due to lack of organization of any single unit or agency in the field of public health, but rather, to the disconnected operation of many agencies engaged in similar activities.
>
> State and federal funds have been slow in making their way into the community. Nearly all federal grants and state appropriations are used directly to finance the activities of state administrative agencies; a very small part is passed on to local units to support programs of their own.
>
> In Blue Earth County of Minnesota with about 40,000 population a careful study revealed 155 units of local government charged with many similar and oft-times over-lapping functions, some 105 state agencies and 38 federal agencies with offices in the county, a total of 298 units and agencies of government serving the people of this county, exclusive of the over-all ministrations of the state and federal governments.
>
> Of our 155,000 units of government in the United States, we have about 150,000 too many.
>
> Admitting that we have too many governmental units — one for every 850 people and every 19 square miles — it is highly improbable that we shall see any marked decrease through compulsory methods for many years to come. It is more likely that a desirable reduction in the number of governmental units will come only after practical demonstration of cooperative action along functional lines.

Let me close by briefly putting before you the structure of public health as I see it, a possible and

certainly desirable function of civil government. First in time and importance will be the 1200 or so units of local health administration (instead of the present 18,000 health departments), from the least of perhaps no more than 30,000 persons, and preferably not less than 50,000, to the largest and one of the oldest, the five-county unit of the City of New York.

These will be the chief instrument of public health in the United States, with the consultative, advisory, standardizing and probably financial backing of the state departments of health and the long-awaited single federal health authority, the last also giving invaluable support through financial and technical aid and the benefit of its interstate and national functions. Federal aid will be based on evidence of a competent state plan for total coverage by local services whose functions, methods and personnel have been officially declared, and then funds will be available only to units recognized as too economically disadvantaged to meet the cost of their health department from local and state tax resources alone.

With such a nation-wide administrative structure the basic functions will first be performed with increasing approach to competence before the diversion of dollars and personnel to other and less productive even though temporarily popular activities take place. We have the authority, the technical knowledge, the practical "know-how" to justify a future of higher goals, to make an enduring success of the trial marriage of medicine, or the art of human biology, and representative civil government on our familiar pattern of a democracy. We need better methods, more critical self-analysis, the use of administrative epidemiology, as well as better trained personnel and more liberal conditions of their employment.

* * *

For all, the health benefits now available to part of our people shall follow. And when it is all said and done we find in the few lines from Shakespeare that it need not have taken so many words of mine to relate or so many of your precious collective minutes to listen.

"If to do were as easy as to know what were well to do, chapels had been churches and poor men's cottages prince's palaces."

And without more to-do let us mount our Pegasus of today, and as the Bellerophons of modern democracy lead our fellow men, women, and children to heights of health that can be seen at a distance, but not out of reach for those who accept the hazards of leadership.

Let us who are concerned professionally with the career of public health concentrate the resources of the sciences and of civil government upon the prevention of disease, relying upon the age-old guild of practitioners of the healing art to provide the skills and humane consideration due the sick and suffering.

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RECONSTRUCTION OF THE BURNED HAND*

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RECONSTRUCTION of the burned hand starts at the time of the initial dressing. Intelligent treatment during the first month will effectively prepare the hand for later restorative procedures, whereas misguided handling may thwart all efforts to bring back full function.

EARLY TREATMENT

It is generally agreed that the immediate local treatment of a burned hand includes a minimal amount of débridement confined at most to the gentle removal of vesiculated epidermis and the application of a firm, even pressure dressing. The fingers should be packed individually, and the entire hand encased in a bulky, fluffed-gauze dressing retained by a snug elastic bandage. The position of the hand within the pack is important. Fingers should be spread, and all joints fixed in moderate flexion, a position easily obtained by having the hand grasp a large gauze ball. This also brings the thumb well away from the index finger into a position of opposition. The wrist is supported by a light dorsal plaster splint in slight dorsiflexion. In other words, the hand is immobilized in a position of function where any permanent limitation of motion will prove least deleterious.

Cope and his associates[1] have called attention to the manifest advantages of the immediate or early excision of severely burned areas and replacement by free skin grafts. Although this method has a place in the treatment of the burned hand, one must appreciate the fact that the anatomic features of the hand, with its dearth of subcutaneous tissue, necessitate a dissection uncomfortably close to important structures such as the extensor tendons and the aponeuroses of the fingers. Unless a graft can be applied accurately and made to adhere com-

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pletely, the result may be damaging to function; hence the method should probably be reserved for cases of localized burn in which the possibility of any significant loss of graft is slight.

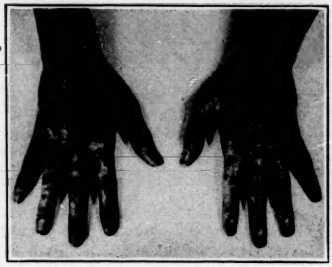


FIGURE 1. *Photograph Showing Spotty Depigmentation of the Skin after a Severe Burn.*

If a paste of pyruvic acid and starch[2] is used to hasten the extrusion of slough, one can still retain the position of function when dressings are applied. This likewise applies to the phase of moist dressings that may be used to prepare the wound for grafting.

Any granulating areas should be resurfaced as soon as the nutrition of the wound permits. Exuberant granulations are shaved down and covered with split-thickness skin grafts of 0.012 to 0.018 inches. It is desirable to excise intervening areas of spotty epithelium, but attempts to carry out a complete resurfacing of the dorsum of the hand and fingers, including a dissection down to the investing membranes of the tendons, had best be deferred to a later time.[3]

First consideration should be given to mobilizing the hand as early as possible to minimize edema and to maintain joint action. Therefore, active and passive exercises should be started even before the grafts are fully stabilized, the attendant watching carefully for bleb formation and splinting any such area until the tendency to loosen has passed. New grafts and newly formed skin must be carefully protected. The patient can do this consciously during the waking hours, but at night protective dressings should be reapplied to guard against trauma during sleep. This is the best time to correct incipient contractures. Proper positioning of the digits on a night splint, with gentle elastic traction at strategic points, should maintain a functional position throughout this phase of stabilization of integument. Once this state is reached one can start a program of occupational therapy and await softening of scar and improved nutrition of the hand before considering a more permanent type of replacement. In many cases the primary graft may prove quite satisfactory, and no further resurfacing will be needed.

Later Reconstruction

Skin presents a curious variation of response to thermal injury. One type occasionally seen is the spotty depigmentation of the dorsum (Fig. 1), which is not necessarily associated with keloid or contracture, but which in itself may offer sufficient reason for replacement. One should be sure that the process has become stationary, however, since pigmentation often returns in the course of time.

Hypertrophic keloid is a common manifestation of burned skin. It is desirable to wait until the erythematous phase has subsided before proceeding with replacement unless contractures demand early attention. In equivocal cases it is well to temporize

A B

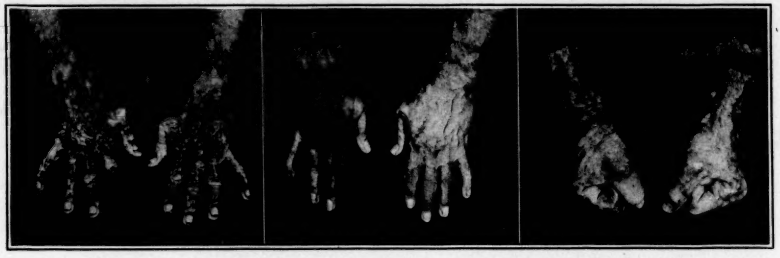
FIGURE 2. *Preoperative* (A) *and Postoperative* (B) *Photographs of Contracting Scar Replaced by a Near-Full-Thickness Graft from the Abdomen.*

Note the broken line crossing the dorsum of the wrist.

since even heavily developed keloids will soften within the course of months.

The principal indication for resurfacing is the presence of constricting or unstable scar. A hand enclosed in the vise-like grip of a burn scar is lacking proper nourishment as well as suffering from the mechanical effects of the tightness. A scar that tends to form superficial ulcerations at the slightest trauma is a severe economic handicap.

A most satisfactory type of resurfacing employs the near-full-thickness skin graft, which is dissected off the abdominal wall by scalpel and the defect closed by undermining after the remaining thin sheet of dermis has been removed (Fig. 2*A* and *B*). Although this gives excellent stability with a minimum of shrinkage, the method requires both a great deal of time and an extensive procedure on the abdominal wall. Hence for expediency the split-thickness skin graft,[4] taken either free hand or with a dermatome, is usually employed. This gives adequate stability, does not contract unduly and in most cases furnishes an inconspicuous color tone.



A B C

FIGURE 3. *Photographs Showing Constricting Keloidal Scars of the Dorsum of the Hands* (A) *and Replacement by Split-Thickness Grafts* (B). *Note position of line of juncture of grafts at base of right thumb* (C).

At the Hitchcock Clinic dorsal resurfacing procedures are carried out under a tourniquet. The scar is elevated at its natural cleavage plane, and the dissection carried to the line dividing volar and dorsal surfaces of the hand and of any affected digits. Only the portions of the digits that show tightness or instability are denuded. The tourniquet is then released, and hemostasis effected.

Split-thickness skin grafts approximately 0.022 inch thick are removed with a dermatome. For complete coverage of the dorsum of a hand one

A B

FIGURE 4. *Photographs Showing Severe Contractures and Imbedding of the Volar Aspects of All the Fingers of the Right Hand in Scar* (A) *and Release of Contractures by Free Grafts of the Entire Volar Surface and Part of the Dorsum* (B). *The useless little finger has been amputated.*

and a half drums are removed. The graft comprising one full drum is used to cover the fingers and their metacarpals. The half-sized graft will cover the thumb and the triangle at its base. All suture lines are placed so as to avoid contractures

FIGURE 5. *Complex Contractures of the Fingers Involving the Joint Capsules.*
Replacement of scar by free grafts has not overcome the deformity.

(Fig. 3). Lines extending across expanding and contracting portions of joints are avoided if possible. When such a line is necessary it is broken into oblique components by means of a dart (Fig. 2*B*). The grafts are trimmed to fit the defect accurately and are sutured to the wound margins without overlapping. Firm, even pressure is applied by careful packing, and the hand immobilized in a functional position as described above. Although the dressing should be applied snugly, one should guard against excessively tight bandaging, which has been known to cause ischemic contracture.

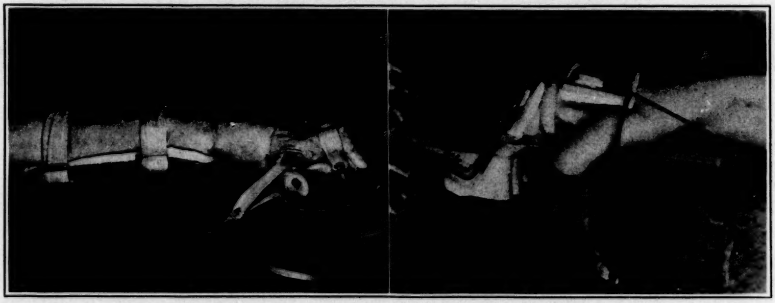
In cases of more extensive damage, particularly in cases in which digits are involved, the base may be unsuitable for free grafting, or the loss of tendons and joint capsules may necessitate further reconstructive work. Such cases necessitate the more protracted method of resurfacing by means of direct pedicle flaps using skin and underlying fat from the abdominal wall or from the opposite arm.

Burns of the volar surface of the hand, although less frequent, are usually associated with severe damage to the hand generally and present baffling problems in restoration. If flexor tendon sheaths are preserved one may find it possible to release contractures by free grafts (Fig. 4); otherwise it may be necessary to use a tubed pedicle flap through which corrective procedures on the tendons and joints may be carried out later.

Contractures of the interdigital webs are an almost constant finding in significant burns of the dorsum of the hand. When a free graft is applied dorsally this web may be broken by carrying a point of the graft well down to the volar aspect.

Residual joint contractures may be produced in various ways. Lack of splinting will allow severely burned hands to assume grotesque positions. On the other hand improper splinting, particularly immobilization on a flat splint, may result in complex contractures of the digits and adduction contracture of the thumb.

A common type is extension contracture of the metacarpophalangeal joints due to tightening of skin and shortening of extensor tendons. The almost invariable concomitant of this contracture is a flexion contracture of the proximal phalangeal joints (Fig. 5). If skin replacement fails to correct this deformity one should use a splint of the type repre-



A B

FIGURE 6. *Two Types of Splint* (A *and* B) *Used to Produce Flexion of the Metacarpophalangeal Joints, Extension of the Proximal Phalangeal Joints and Abduction and Opposition of the Thumb.*

sented in Figure 6*A* and *B*, which, while permitting active exercise, maintains elastic traction to straighten the finger contractures and to bring the thumb away from the index finger and into opposition.[5] If corrective splinting fails capsulectomy may improve position of the metacarpophalangeal joints, and if this is ineffective, fusion is indicated. Occasionally it has proved advantageous to perform a capsulectomy of the metacarpophalangeal joints at splinting of the thumb in a position of function, but if integumentary loss has been significant a free graft will be needed to permit adequate abduction. If the contracture has been existent for a long period, simple replacement of skin will not correct the deformity inasmuch as the adductor muscles will have become shortened and fibrotic. This condition can be improved if one detaches the adductors from their insertions at the base of the

A B

FIGURE 7. *Photographs Showing Keloidal Scarring of the Dorsums of Both Hands, with Complex Contracture of the Right Little Finger* (A), *and Correction by Amputation of the Little Finger and Part of its Metacarpal* (B), *Skin of the Amputated Finger Being Used to Release Extension Contracture of the Ring Finger.*

The dorsum of the left hand has been resurfaced by a free graft.

the time of resurfacing, as described by Shaw and Payne,[6] which permits proper positioning of the fingers when the grafts are applied.

The little finger is particularly prone to develop complex contracture. If the deformity is severe I have occasionally amputated the finger, together with part of the fifth metacarpal bone, thereby giving the patient a stable, well functioning hand of reasonably satisfactory appearance and avoiding a long program of reconstruction that at best offers only partial function (Fig. 7).

Another frequently noted deformity is a flexion contracture of the metacarpophalangeal joints. This often signifies that the extensor tendon and the hood have been destroyed or split, allowing the two halves to slide off the prominence of the knuckle into the intermetacarpal fossae. The initial correction should consist of an extension splint to the proximal phalanges to overcome the unopposed action of the long and intrinsic flexors, and then of replacement or resuturing of the damaged extensor tendon and hood mechanism.

Flattening of the thumb with adduction contracture may be minimized by early and effective first phalanx and reattaches them more proximally on the first metacarpal, deepening the web and permitting the thumb to fall into a more abducted position.

SUMMARY

Restoration of a burned hand starts with initial immobilization in a functional position.

Early replacement of constricting or unstable scars is most important in restoring proper nutrition and avoiding contractures.

Proper elastic splinting should be employed not only in the correction of contractures but also, more assiduously, in the prevention of contractures.

REFERENCES

1. Cope, O., Langohr, J. J., Moore, F. D., and Webster, R. C., Jr. Expeditious care of full-thickness burn wounds by surgical excision and grafting. *Ann. Surg.* **125**:1-22, 1947.
2. Connor, G. J., and Harvey, S. C. Pyruvic acid method in deep clinical burns. *Ann. Surg.* **124**:799-810, 1946.
3. Webster, G. V., and Rowland, W. D. Skin-grafting burned dorsum of hand. *Ann. Surg.* **124**:449-462, 1946.
4. Brown, J. B., and McDowell, F. *Skin Grafting of Burns: Primary care, treatment, repair.* 204 pp. Philadelphia: J. B. Lippincott Co., 1943.
5. Bunnell, S. Active splinting of hand. *J. Bone & Joint Surg.* **28**: 732-736, 1946.
6. Shaw, D. T., and Payne, R. L., Jr. Repair of surface defects of upper extremity. *Ann. Surg.* **123**:705-730, 1946.

PHEOCHROMOCYTOMAS COEXISTING IN ADRENAL GLAND AND RETROPERITONEAL SPACE, WITH SUSTAINED HYPERTENSION*

Report of a Case with Surgical Cure

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PHEOCHROMOCYTOMA as a cause of hypertension is being more frequently recognized than it was a decade ago. There are several reasons for this:

In recent years physicians have become increasingly familiar with the variegated symptom-complex produced by these tumors.

The recent trend for complete diagnostic survey in patients with high blood pressure leads occasionally to the discovery of an unsuspected adrenal tumor.

Emphasis on the part of many observers that these tumors may produce persistent unremitting hypertension clinically indistinguishable from essential hypertension has led to a greater suspicion of their presence in the study of hypertensive patients.

Improved technics in the diagnosis of early enlargements of the adrenal gland, such as intravenous pyelography and perirenal insufflation of air and other gases, have helped immeasurably in the localization of tumors too small to be demonstrated by other nonsurgical means.

Thoracolumbar sympathectomy, which brings the adrenal gland into view on the operating table, is being done with increasing frequency for the treatment of hypertensive disease.

Complete cure of the syndrome, with return of the blood pressure to normal, is not an infrequent sequel to surgical extirpation of the tumor. The operative mortality in these cases has recently been strikingly reduced as a result of increasing knowledge regarding epinephrine shock and its control by appropriate administration of adrenalin and the adrenal cortical extracts when indicated.

Multiple pheochromocytomas occur rarely. Of the surgically cured cases of pheochromocytoma recently summarized by MacKeith,[1] all were solitary. The following case report is thought to be of interest because it represents the first recorded case of multiple pheochromocytomas surgically cured.

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CASE REPORT

A 12-year-old girl of Italian extraction was admitted to the hospital in September, 1943, because of excessive perspiration and increased appetite with failure to gain weight. The illness had begun 2 years before admission, when she first noticed a tendency to sweat profusely. She began to be intolerant of heat. Her appetite became excessive, and yet she had gained no weight, and shortly before admission she had begun to lose weight. She noticed excessive thirst and drank large quantities of water. She complained of easy fatigability and of palpitations, stating that the heart often beat fast, even without exercise. Occasionally, she sensed numbness and tingling in the hands. Two determinations of the basal metabolic rate before admission had been reported as + 50 per cent and + 30 per cent.

The past and family histories were noncontributory.

Physical examination disclosed an undernourished, apprehensive, emotionally unstable girl. The skeletal development was good. The skin was always warm and moist. The eyes showed no evidence of exophthalmos, and the eye grounds were normal. The eye signs of thyrotoxicosis were conspicuously absent. The thyroid gland was not palpably enlarged. The chest was clear. The heart was not enlarged, and the rhythm was regular. No murmurs could be heard. The liver edge was felt two fingerbreadths below the right costal margin. No abdominal masses could be felt. Application of pressure over the abdomen failed to influence the level of the blood pressure. The reflexes were physiologic.

The pulse consistently averaged 120, and the blood pressure 180/120, the hypertension being unremitting and not paroxysmal.

Examination of the blood revealed a normal red-cell count, hemoglobin, white-cell count and differential count. Urinalysis showed a specific gravity of 1.024, a slight trace of albumin, no glucose and an occasional white cell in the sediment. The glucose tolerance test gave a diabetic type of curve. The fasting blood sugar was 88 mg., and the nonprotein nitrogen 34.6 mg. per 100 cc. The blood iodine level was 4.8 microgm. per 100 cc. (normal average 6.2 microgm.). Several determinations of the basal metabolic rate varied from +51 to +67.6 per cent. The serum cholesterol was 215 mg. per 100 cc. An electrocardiogram showed sinus tachycardia. X-ray films of the skull and the chest were normal. A plain film of the abdomen disclosed a tiny area of calcific density in the region of the left suprarenal shadow.

The patient was observed repeatedly for the next 9 months, during which the physical findings remained unchanged except that by June, 1944, the blood pressure had risen to 200/150 and a soft, blowing systolic murmur could be heard over the apex. The eye grounds showed blurring of the disk margins, with papilledema. The arteries were markedly narrowed, and the veins showed nicking at the arteriovenous crossings. Several fluffy-white exudates and a flame-shaped hemorrhage could be seen. These signs of hypertensive retinopathy progressed rapidly while the patient was under observation.

A trial with Lugol's solution failed to influence the clinical state.

Intravenous pyelograms were normal. Bilateral perirenal insufflation of air was carried out, and considerable enlargement of the left adrenal gland was visualized on the x-ray film (Fig. 1).

A diagnosis of tumor of the left adrenal gland, probably intramedullary pheochromocytoma, was made, and through an extraperitoneal lumbar approach, the left adrenal gland was explored and found to contain, in its midportion, an encap-

sulated globular tumor 2.5 cm. in diameter. The blood vessels leading to it were found to be dilated. Manipulation of the tumor while the patient was under anesthesia caused a rise in the blood pressure from 170/120 to 200/160 and in the pulse from 130 to 170, but with removal of the tumor the blood pressure fell to 60/30, requiring intravenous adrenalin, intramuscular adrenalin-in-oil and 10 cc. of adrenal cortical extract (eschatin) subcutaneously. It was thought that a mass distinct from the adrenal gland could be felt, but in view of the patient's condition, further exploration and further surgical exposure seemed unduly hazardous and were not carried out.

The tumor weighed 6 gm. It was yellow, soft and lobulated, containing two small, triangular-shaped, red areas suggestive of infarction. Microscopically it was composed of rounded masses of cells, with large nuclei containing fine distinct granules and fine threads of chromatin, which could be seen as greenish-brown granules in the cytoplasm when stained with Schmorl's stain (Fig. 2). The capsule consisted of a thick fibrous layer. The tumor showed no inclination to pass this barrier and was considered a cytologically benign pheochromocytoma. Treatment with ferric chloride solution yielded a deep olive-green color, indicating the presence of adrenalin or an adrenalin-like substance in the tissue. A qualitative test of the tumor was made for adrenalin by Dr. C. Harrison Snyder, Jr. An acid aqueous extract

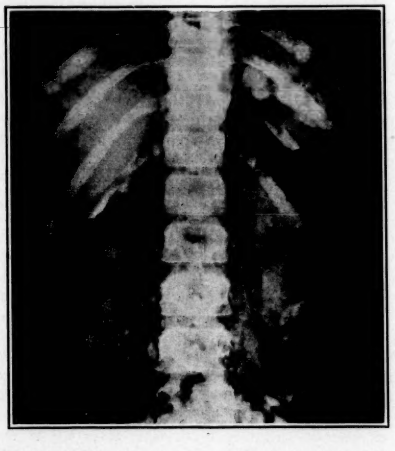

FIGURE 1. *Plain Film of the Adrenal Glands Taken after Bilateral Perinephric Air Insufflation.*

Marked triangular enlargement of the left adrenal gland due to the presence of the intramedullary pheochromocytoma is seen. The right adrenal gland is not enlarged. Note that the position and axis of the left kidney are not remarkable.

of the tumor was prepared, and a few drops placed in the conjunctival sac of a rabbit upon which a unilateral cervical sympathectomy had previously been done. The eye on the normal side was not affected, but the "denervated" eye dilated maximally even with high dilutions of the extract. This test, although not quantitative, is considered highly specific for adrenalin.

After the removal of the intra-adrenal pheochromocytoma, the blood pressure fell to a level lower than that before operation, and symptomatically the patient experienced relief from the excessive sweating. However, the blood pressure was still pathologically high, averaging 160/144. It was considered likely that there was some adrenalin-producing tissue still present. This impression was given support by the suspicion of a mass that, at the time of the first operation, had been thought to be present, and also by the benzodioxane studies.

Eight weeks after the first operation, the abdomen was explored, and in the left retroperitoneal space, a spherical tumor, 4 cm. in diameter, could be felt and was found lying medial and cephalad to the left adrenal gland and quite distinct from it. This was removed through a left subcostal

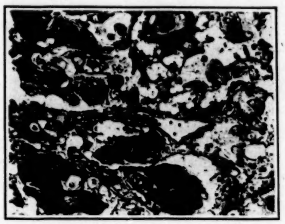

FIGURE 2. *Photomicrograph Showing the Histopathology of the Benign Intramedullary Pheochromocytoma.*

Note the presence of large, irregular cells with deep-staining granular cytoplasm and eccentric nuclei. The granules appear greenish in Schmorl's stain.

oblique transperitoneal incision. It probably originated in the first or second lumbar sympathetic ganglion.

The tumor was encapsulated, rubbery in consistence and yellow green. It had essentially the same architectural pattern as the original intra-adrenal tumor. Schmorl's stain again showed large amounts of chromaffinic material.

Postoperatively, the blood pressure fell to 138/100. Six months after operation the blood pressure had fallen to 114/54. The patient was completely asymptomatic. The excessive perspiration and ravenous appetite had disappeared. She had acquired a healthy respect for the cold and no longer experienced any palpitation or numbness and tingling in the extremities.

One and a half years after the second operation, she was in vigorous health, having gained 28 pounds in weight. The blood pressure was 116/78, the basal metabolic rate was +5 per cent, visual acuity was 20/20, and there was complete disappearance of papilledema, hemorrhages and exudates. She was apparently completely normal.

CLINICAL ASPECTS

Many adequate descriptions of the syndrome of paroxysmal hypertension due to tumors of the adrenal medulla have been given in the literature and need not be reviewed. Although the disease is thought to present symptoms of paroxysmal attacks of hypertension, with copious perspiration, tachycardia, palpitation, headache, numbness and tingling in the extremities, there has been a tendency on the part of recent authors to emphasize the statement that the hypertension may be well sustained and need not be paroxysmal. In this way, the distinction between this disease and malignant hypertension may present real diagnostic difficulties, as pointed out by Palmer and Castleman.[2] In other words, the discharge of adrenalin or some adrenalin-like pressor substance from the tumor need not be paroxysmal, but may be continuous. Indeed,

Howard and Barker[3] concluded from their study of 18 cases that persistent hypertension is too common in this disease to be ignored as part of the syndrome. Quinby[4] has also reported persistent hypertension in pheochromocytoma.

The hypermetabolism noted in the case presented above has been previously described. McCullagh and Engel,[5] of Cleveland, reported 2 cases with high basal metabolic rates. The differential diagnosis between pheochromocytoma and hyperthyroidism was facilitated in the case reported above by a normal blood iodine level. The poor response to Lugol's solution was also considered strong evidence against hyperthyroidism.

The differential diagnosis between psychoneurosis and hysteria on the one hand and pheochromocytoma on the other may present some difficulties, as pointed out by Van Epps et al.[6] Peculiar sensations, such as choking and a full feeling in the neck, precordial and substernal distress, are symptoms difficult to evaluate. The numbness and tingling of the extremities, with blanching on one occasion, suggested the possibility of an angiospastic condition such as Raynaud's disease.

A remarkable case of hypertension associated with diabetes was reported by Duncan, Semans and Howard.[7] After removal of the pheochromocytoma the blood pressure fell to normal, and the diabetes mellitus completely disappeared.

It is significant that intravenous pyelograms failed to disclose the presence of a suprarenal tumor. In 11 of the 18 cases studied by Howard and Barker,[3] the adrenal tumors were diagnosed by pyelography. If perirenal insufflation of air had not been resorted to, the intra-adrenal tumor in the case reported above would have been missed, since pyelographic demonstration of displacement of the kidney and alteration in its axis was insufficient to suggest the presence of a tumor in the left suprarenal space. Cahill[8–10] has stressed the importance of perirenal air insufflation in the localization of small enlargements of the adrenal gland that can be preoperatively identified in no other way.

Other laboratory determinations have been found to show some departure from normal. The serum potassium has been found elevated, as has the urea clearance. The explanation given by McCullagh and Engel[5] for the increased urea clearance is the "rapid flow of blood through the tissues." The administration of adrenalin to a normal subject produces a decrease in renal blood flow, an unchanged rate of glomerular filtration and a marked increase in filtration fraction — changes indicative of afferent glomerular arteriolar constriction.

The peripheral blood flow is decreased during hyperadrenalinemia. The skin temperature is reduced, and the peripheral resistance is increased. In a patient with pheochromocytoma Evans and Stewart[11] observed these changes, which were reversed after removal of the tumor. These authors explain the attacks of perspiration as resulting not from direct autonomic sympathetic stimulation of the sweat glands but as a response of the body to a state of increased heat production (as produced by the hypermetabolism and noted in the elevated temperature) combined with decreased peripheral blood flow. Profuse perspiration leads to cooling by evaporation, the excess heat being thus dissipated.

By 1940 only 11 cases of extra-adrenal pheochromocytoma had been reported; 9 of these were tumors of Zuckerkandl's organ, 1 was in a retroperitoneal ganglion near the origin of the superior mesenteric artery, and 1 was intrathoracic, occurring in the right pleural cavity paravertebrally at the level of the sixth intercostal space. In 1940 Phillips[12] reported a second intrathoracic pheochromocytoma that clinically masqueraded as a tumor of the left apical sulcus at the level of the first intercostal space with Horner's syndrome. The patient died of cardiac decompensation and a stroke. Autopsy showed normal adrenal glands, advanced renal arteriosclerosis and a pheochromocytoma in the region of the apex of the left hemithorax.

Thus, the clinical aspects of this disease are variable and may suggest such unrelated pathologic processes as tumor of the superior sulcus, Raynaud's disease, essential hypertension and psychoneurosis.

Pathology

Pathologically, the tumor arises from the pheochromoblast cell. This is to be distinguished from the sympathoblast cell, which represents the anlage of the sympatheticoblastomas, or neuroblastomas, a tumor unrelated to the syndrome under discussion. Goldzieher[13] has outlined the genetic development of tumors of the adrenal medulla. These are derived from the parent cell, or sympathogonia, which in the course of embryologic development, differentiates into the sympathoblast and the pheochromoblast. The sympathoblast gives rise to the ganglion cell whereas the pheochromoblast gives rise to the pheochromocyte, from which cell type are derived the cells of the chromaffin system, first described by Kohn,[14] in 1903, as consisting of chromaffin or chromophilic cells found along the entire length of the autonomic nervous system occurring in the autonomic ganglions as nests known as chromaffin bodies or paragangliomas. In addition, the chromaffin system includes the adrenal medulla, carotid body and Zuckerkandl's organ, which comprises two small chromaffin bodies lying anterior to the aorta near the inferior mesenteric artery.

It should be pointed out that although any chromaffin body may at least theoretically develop a tumor called a chromaffinoma or pheochromocytoma, such a tumor need not produce the hypertensive syndrome. Cragg[15] has shown that there is no necessary correlation between chromaffinity and

the presence of epinephrine. Thus, by 1943, 275 cases of carotid-body tumors had been reported, and in none of these was hypertension present. It appears that chromaffinomas of the carotid body do not produce hyperadrenalinemia. Tumors of Zuckerkandl's organ, on the other hand, may or may not produce adrenalin.

The tumors that produce hypertension are usually found to contain increased amounts of adrenalin when analyzed. Normally, the adrenal glands contain 0.4 mg. per gram of tissue, but some tumors have been found to contain as much as 20 mg. per gram.

The chromaffinoma stains yellow with Zenker's chromate solution, and this chromate fixation is characteristic of the tumor. Cytologically, these tumors consist of polyhedral cells arranged in nests or masses, containing abundant cytoplasm, but varying considerably in size and shape. They often show hemorrhagic cysts.

The tumors may be unilateral or bilateral, benign or malignant. MacKeith[1] showed that 9.7 per cent were bilateral and 9 per cent were malignant. Thus, in most cases of this syndrome, one may reasonably expect to find a single benign tumor as responsible pathologically for the symptom complex.

There has been an interesting association of cutaneous neurofibromatosis with pheochromocytoma in 9 of the 165 cases of adrenal tumors reported by MacKeith.[1] Most of these have been in bilateral adrenal tumors.

Autopsy studies reported by Howard and Barker[3] revealed that nephrosclerosis was an uncommon finding and that when it was present, it was of mild degree.

1164F (Dimethyl Piperidinoaminomethyl Benzodioxane)

Pharmacologic interest in dioxane drugs dates back to 1933, when Fourneau[16] reported synthesis of some of these derivatives. One of these, 933F (piperidino-methyl-benzodioxane), has been studied extensively. In 1934 deVleeschhouwer[17] showed that 933F reverses the hypertension produced by adrenalin in the chloralosanized dog and reduces or abolishes the smooth-muscle response to adrenalin, leaving unimpeded the nerve stimuli.

Katz and Friedberg,[18] in 1939, produced in trained, unanesthetized dogs, a reversal or inhibition of the adrenalin pressor action with 933F in doses of 1 to 5 mg. per kilogram of body weight.

Morison and Lissak[19] showed that 933F accelerates the inactivation of adrenalin in vitro.

The theory of Rosenblueth and Cannon[20] regarding the mechanism of this antiadrenalin action of 933F suggests that this dioxane derivative increases the polarization and decreases the permeability of smooth muscle, blocking the passage of adrenalin to its site of action inside the smooth-muscle cell — that is, 933F polarizes the effector cells and thus limits the penetration of circulating chemicals (such as adrenalin) without affecting the activity of mediators liberated intracellularly by the nerves.

The possible use of benzodioxane derivatives as indicators of hyperadrenalinemia in clinical diagnosis was first suggested by Biskind, Meyer and Beadner[21] in 1941. Previously, the demonstration of hyperadrenalinemia depended upon the modified Pissemski method of perfusion of a rabbit's ear with blood drawn from a patient having an hyperadrenalinemic crisis — as done by Beer, King and Prinzmetal[22] (1937), who demonstrated a reversal effect with ergotamine. This is a cumbersome test requiring special technical facilities that are not easily available in many laboratories.

The effect of these drugs on experimentally produced hypertension in animals has been studied by Bing and Thomas[23] and by Goldblatt,[24] and it has been shown that renal hypertension is not significantly influenced by the intravenous administration of one of these derivatives, 883F (di-ethyl amino methyl benzodioxane).

Sapirstein and Reed,[25] using 933F intraperitoneally, produced no change in the blood pressure of normal rats and in the blood pressure of rats made hypertensive by the partial ligation of one renal artery.

Recent studies by a group at the Columbia-Presbyterian Medical Center — comprising Dr. Henry Aranow, Jr., and Dr. Marcel Goldenburg, of the Medical Service, and Dr. C. Harrison Snyder, Jr., of the Babies Hospital — suggest that the blood-pressure level in patients with essential hypertension is not significantly influenced by the intravenous injection of 1164F (dimethyl piperidinoaminomethyl benzodioxane), another representative dioxane derivative. These workers thought it reasonable to expect that the blood pressure in patients with hyperadrenalinemia would show a demonstrable fall if one of these drugs were injected intravenously.

When, after the removal of the intra-adrenal tumor, a solution of 1164F was injected intravenously in the case presented above, a significant drop in blood pressure from 160 systolic, 144 diastolic, to a normal level (100 systolic, 60 diastolic) ensued. Upon cessation of the injection, the blood pressure rose to its preinjection level, only to fall to normal again upon repeated intravenous injection of 1164F. The dose of each injection was 15 mg. of the dry powder dissolved in 1.5 cc. of sterile distilled water given intravenously in a two-minute period during a continuous intravenous drip of physiologic saline solution.

The results of this test suggested the possibility of residual hyperadrenalinemia and therefore the likelihood that residual pathologic adrenalin-producing tissue was still present. Surgical exploration proved this to be so, and the second pheochromocytoma was found and removed.

After both pheochromocytomas had been surgically removed and the blood pressure had fallen to normal levels, the intravenous injection of 1164F was repeated, and no change in the blood-pressure level could be induced, suggesting that hyperadrenalinemia was no longer present and that all the pheochromocytoma tissue had been successfully removed.

Goldenberg, Snyder and Aranow[26] have devised a new test for hypertension due to circulating epinephrine. This is based on the adrenolytic effect of benzodioxane derivatives.

Treatment

The treatment is surgical extirpation of the tumor or tumors, if more than one can be shown to exist. Many reports of dramatic cures have been recorded, and these have recently appeared with increasing frequency. There has been a demonstrable reduction in the operative mortality, and among the last 18 cases reviewed by MacKeith,[1] only 3 deaths occurred — an operative mortality of 16.6 per cent for solitary pheochromocytoma.

Ideal care before and after operation demands the assistance of an internist who, in close co-operation with the anesthetist, will carefully observe the changes in the pulse and blood pressure and regulate the dose of intravenous and intramuscular adrenalin and determine the indications for the administration of adrenal cortical extracts, both natural and synthetic. The importance of atraumatic manipulation of the tumor during operation cannot be overemphasized. The value of adequate surgical exposure is obvious, and if possible the blood supply to the tumor should be occluded before manipulation. During the operative procedure, one may be vividly impressed with the immediate dramatic fluctuations in the patient's blood pressure, because these tumors, although usually histopathologically benign, may be physiopathologically malignant. This fact is illustrated by the case report of Brunschwig and Humphreys,[27] whose patient had a nearly fatal attack of syncope, but finally recovered, and by the case report of Palmer and Castleman,[2] whose patient died before surgical treatment could be instituted.

Tumors have been successfully removed by both the extraperitoneal lumbar approach, with or without rib resection, and the abdominal transperitoneal approach. The latter probably affords a better opportunity for abdominal exploration for the presence of multiple tumors.

In the case reported above the intra-adrenal tumor was removed by a flank extraperitoneal incision, and the extra-adrenal tumor by an oblique subcostal transperitoneal approach.

Discussion

Pheochromocytoma must be ruled out as a possible etiologic agent in any patient with hypertension, whether paroxysmal or continuous and unremitting.

Perirenal insufflation of air or some other gas is at times the only nonoperative technic that will help to localize an adrenal enlargement too small to cause demonstrable displacement of the homolateral kidney.

The possibility of multiple pheochromocytomas must be considered in the management of any patient who fails to show a complete and permanent return of the blood pressure to normal after the removal of one pheochromocytoma. Multiple tumors may be present in the same patient, and more than one operation may be necessary to remove, completely, all the pathologic adrenalin-producing tissue present before one may reasonably expect the blood pressure to return to normal levels.

One of the benzodioxane derivatives, 1164F (dimethyl piperidinoaminomethyl benzodioxane), appeared to have given some diagnostic aid in suggesting the presence of hyperadrenalinemia in the case reported.

Summary

A case of coexisting intra-adrenal and extra-adrenal pheochromocytomas is reported, with a brief discussion of the surgical management that resulted in cure of the patient. This appears to be the first recorded case of surgical cure of multiple pheochromocytomas.

The clinical manifestations of pheochromocytoma are briefly reviewed, and emphasis is placed upon the variability of the symptoms and signs.

The difficulties that are at times encountered in differentiating this disease from essential hypertension, hyperthyroidism, angiospastic states, such as Raynaud's disease, psychoneurosis and diabetes mellitus are emphasized.

Importance is placed on perirenal insufflation of air as an aid in the localization of early enlargements of the adrenal gland that can be identified by no other nonoperative means.

The value of atraumatic surgical technic and of careful administration of adrenalin and adrenal cortical extracts, both natural and synthetic, when indicated, during the operation and postoperatively is stressed.

A report of the depressor effect of 1164F, a benzodioxane derivative (dimethyl piperidinoaminomethyl benzodioxane), injected intravenously, on the elevated blood pressure of a patient suffering from a pheochromocytoma is given, and the possibility that this substance will prove of help in the clinical diagnosis of hyperadrenalinemia is mentioned.

References

1. MacKeith, R. Adrenal-sympathetic syndrome: chromaffin tissue tumour with paroxysmal hypertension. *Brit. Heart J.* **6**:1-12, 1944.

2. Palmer, R. S., and Castleman, B. Paraganglioma (chromaffinoma, pheochromocytoma) of adrenal gland simulating malignant hypertension: report of case. *New Eng. J. Med.* **219**:793-796, 1938.

3. Howard, J. E., and Barker, W. H. Paroxysmal hypertension and other clinical manifestations associated with benign chromaffin cell tumors (phaeochromocytomata). *Bull. Johns Hopkins Hosp.* **61**:371-410, 1937.

4. Quinby, W. C. Discussion of Herman, L. Lateral non-renal retroperitoneal neoplasms. *Tr. Am. A. Genito-Urin. Surgeons* **36**:103, 1943.

5. McCullagh, E. P., and Engel, W. J. Pheochromocytoma with hypermetabolism: report of two cases. *Ann. Surg.* **116**:61-75, 1942.

6. Van Epps, E. F., Hyndman, O. R., and Greene, J. A. Clinical manifestations of paroxysmal hypertension associated with pheochromocytoma of adrenal: report of proved and of doubtful case. *Arch. Int. Med.* **65**:1123-1129, 1940.

7. Duncan, L. E., Jr., Semans, J. H., and Howard, J. E. Adrenal medullary tumor (pheochromocytoma) and diabetes mellitus: disappearance of diabetes after removal of tumor. *Ann. Int. Med.* **20**:815-821, 1944.

8. Cahill, G. F. Tumors of adrenal and use of air insufflation in their diagnosis. *Radiology* **37**:533-544, 1941.

9. *Idem.* Discussion of Hyman A., and Mencher, W. H. Pheochromocytoma of adrenal gland. *J. Urol.* **49**:755-776, 1943.

10. *Idem.* Hormonal tumors of adrenal. *Surgery* **16**:233-265, 1944.

11. Evans, W. F., and Stewart, H. J. Peripheral blood flow in case of adrenal pheochromocytoma before and after operation. *Am. Heart J.* **24**:835-842, 1942.

12. Phillips, B. Intrathoracic pheochromocytoma. *Arch. Path.* **30**:916-921, 1940.

13. Goldzieher, M. A. *The Adrenals: Their physiology, pathology and diseases.* 436 pp. New York: Macmillan Co., 1929.

14. Kohn, A. Die Paraganglien. *Arch. f. mikr. Anat.* **62**:263-365, 1903.

15. Cragg, R. W. Concurrent tumors of left carotid body and both Zuckerkandl bodies. *Arch. Path.* **18**:635-645, 1934.

16. Fourneau, E., and Bovet, D. Recherches sur l'action sympathicolytique d'un nouveau dérivé de dioxane. *Arch. internat. de pharmacodyn. et de thérap.* **46**:178-191, 1933.

17. de Vleeschhouwer, G. Influence d'un nouveau dérivé de la dioxane sur les réflexes vasomoteurs et sur l'hypertension adrénalique et nicotinique. *Compt. rend. Soc. de biol.* **115**:1247-1249, 1934.

18. Katz, L. N., and Friedberg, L. Hemodynamic effect of dioxane derivative 933F on trained unanesthetized normal and renal hypertensive dogs and its effect on pressor action of renin. *Am. J. Physiol.* **127**:29-36, 1939.

19. Morison, R. S., and Lissak, K. Observations on mode of action on piperidinomethylbenzodioxane (933F). *Am. J. Physiol.* **123**: 404-411, 1938.

20. Rosenblueth, A., and Cannon, W. B. Adequacy of chemical theory of smooth muscle excitation. *Am. J. Physiol.* **116**:414-429, 1936.

21. Biskind, G. R., Meyer, M. A., and Beadner, S. A. Adrenal medullary tumor: pheochromocytoma cured by surgical intervention. *J. Clin. Endocrinol.* **1**:113-123, 1941.

22. Beer, E., King, F. H., and Prinzmetal, M. Pheochromocytoma with demonstration of pressor (adrenalin) substance in blood preoperatively during hypertensive crises. *Ann. Surg.* **106**:85-91, 1937.

23. Bing, R. J., and Thomas, C. B. Effect of two dioxane derivatives, 883 and 933F, on normal dogs and on animals with neurogenic and renal hypertension. *J. Pharmacol. & Exper. Therap.* **83**:21-39, 1945.

24. Goldblatt, H. Cited by Bing and Thomas.[23]

25. Sapirstein, L. A., and Reed, R. K. Effects of Fourneau 883 and Fourneau 933 on late renal hypertension in rat. *Proc. Soc. Exper. Biol. & Med.* **57**:135, 1944.

26. Goldenberg, M., Snyder, C. H., and Aranow, H., Jr. New test for hypertension due to circulating epinephrine. *J. A. M. A.* **135**: 971-976, 1947.

27. Brunschwig, A., and Humphreys, E. Excision of pheochromocytoma following near fatal attack of paroxysmal hypertension. *J. A. M. A.* **115**:355-357, 1940.

MEDICAL PROGRESS

ORTHOPEDIC SURGERY

I. Conditions of the Shoulder

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IT is the purpose of this report to present as clear-cut a clinical picture as possible of the common conditions affecting the shoulder. More than sixty articles from the literature of the past four years have been reviewed to form the basis of this survey.

Codman[1] so well described all known conditions that his book still represents a standard by which all that is new must be judged. Every writer on a subject pertaining to the shoulder is aware of this, and it therefore follows that anyone concerned with the diagnosis and treatment of conditions about the shoulder should be conversant with Codman's book.

Inman, Saunders and Abbott[2] have studied the function of the shoulder girdle by methods that are new and very promising for the future. Already their analysis of motion in the shoulder has a practical bearing. When the arm is abducted, the muscular apparatus enters into a total, combined effort — that is, the action of the deltoid and supraspinatus working together depend on a simultaneous depressor group striving to hold the head of the humerus "fulcrumed" in the glenoid, namely, the subscapularis, infraspinatus and teres minor. This tends to disagree with the old concept that the supraspinatus initiates abduction, which the deltoid carries on. Furthermore, muscle transplants, to replace the deltoid, will not be effective, in the opinion of the authors, if there is a loss also in the power of the depressors.

During abduction of the arm, motion takes place in four joints simultaneously: the sternoclavicular, acromioclavicular, scapulothoracic and scapulohumeral joints. For the first 30° of abduction, or what is called the "setting phase," the simultaneous jockeying of these joints for position varies depending upon individual characteristics. Beyond 30° there is a rather fixed pattern in which the ratio of humeral to scapular motion is 2:1. For free and full elevation of the arm, two other conditions are necessary: lateral rotation of the humerus and rotation of the clavicle. The latter allows opening or elongation of the coraclavicular ligaments. This has a practical bearing on fusion of the acromioclavicular joint. Since a fusion will destroy rotation of the clavicle, it will thereby limit abduction to 90° if the fusion took place with the arm at the

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side; whereas abduction will be elevated to 135° if the fusion occurred with the arm abducted.

It is possible for anyone who examines the shoulder to make further use of shoulder motions in differential diagnosis if the examiner is first aware of the normal pattern. By detecting a variation from this normal pattern, attention can be focused on the particular joint involved that is disturbing the pattern. This procedure is perhaps another way of referring to what Codman[1] has aptly described as scapulohumeral rhythm although it is actually applicable to more joints than were originally considered. This concerns conditions about the shoulder that require careful differential diagnosis, and as a group, they can be classified as causes for painful shoulder. For the purpose of simplification, these causes are discussed below under the headings of calcifications and ruptures of the musculotendinous cuff.

In 1943, Jones[3] studied 600 cases of painful shoulder, and he was startled by the fact that not a single diagnosis of complete rupture of the supraspinatus tendon had been made. At the same time, he was aware that 2 per cent of all shoulders examined at routine autopsy, in patients beyond the age of thirty, showed some degree of tear of the musculotendinous cuff. Codman[1] observed less than 12 complete ruptures, whereas he listed hundreds of cases of incomplete rupture, and yet his own post-mortem studies revealed an approximately equal frequency of large and small ruptures. This indicates that some degree of rupture is a very common occurrence, perhaps more common than is recognized clinically. McLaughlin[4–7] reviewed 3000 cases of lesions of the shoulder of which 275 came to operation. This allowed him to formulate some definite opinions regarding ruptures of the musculotendinous cuff. With the addition of observations from such authors as Howorth,[8] Jones[3] and Gunning,[9] a clinical entity from the standpoint of the underlying pathologic lesion can now be visualized.

Probably most painful shoulders have their origin from the same anatomic fault, which is peculiar to the joint in question. In human beings the shoulder joint is at the mercy of the continuous effect of gravity. There is a rather continuous resistance to gravity by the ligaments and especially the musculotendinous cuff. In addition, the prominence of the outer periphery of the musculotendinous-cuff insertion allows it to be under continuous pressure from the drag of the deltoid. This situation leads to diminished circulatory exchange and thus to local attrition. Attrition produces a weakness in the musculotendinous cuff with the focal point over the supraspinatus insertion. If, to this picture is added excessive use, such as the maintenance of abduction positions for long periods, or faulty use, such as sudden jerky movements, a degeneration is initiated at some point within the structure of the tendon near its insertion. If faulty movements are then continued in repeated small exertions or one large exertion, as might occur in injury, it is very simple for the tendon to give way at its degenerated point. The amount of this giving way is dependent entirely upon the location and amount of degeneration and of the force applied to the shoulder. Once the giving way has occurred, two courses seem open to nature in dealing with the lesion: in the first, which forms the basis for musculotendinous tears, the attrition and degeneration may be of such extent that very little repair is attempted, the defect may remain static, and with repeated use of the shoulder, the lesion may progress; in the second, if sufficient blood supply is still available, nature may attempt to heal the degenerated area, but with repeated use and abuse, the repair process is constantly thwarted, causing an accumulation of an excessive amount of inflammatory granulation repair into which calcareous material can be deposited. This forms the basis for calcification of the musculotendinous cuff or what is commonly termed bursitis. It is possible that tears and calcification are part of the same original pathologic process based on the anatomic peculiarities of the shoulder.

Calcifications of the Musculotendinous Cuff

It has been aptly stated that bursitis is no more a diagnosis than headache or jaundice, and yet the common usage seems justified because the bursa actually is secondarily involved, to a greater extent, than in cuff tears and this helps to separate the two conditions clinically.

The basic lesion has already been described but needs further elucidation. Why calcification occurs and the actual chemical nature of the calcification is not known. The fact remains that it does occur and that the location corresponds with the degenerated area within the rotator cuff. Operative findings have shown that the degree of inflammation varies in accordance with the amount of irritant material in contact with the bursal floor. This irritant material may be composed of degenerated tendon debris with or without calcification. If the same material lies deeper in the tendon, less inflammation is produced in the bursal floor, and the pain is apt to be less. However, another source of pain seems to be from tension built up within the calcareous deposit. This is borne out clinically by releasing the calcareous deposit with relief of pain. Since calcification is not always present when there is pain, the pain must be produced by inflammation of the bursal floor secondary to degenerated tendon debris. In this type of case needling is apt to be less efficacious. The pain that is present depends upon the amount of inflammation and the tension within the calcareous deposit. There is little correlation between the clinical and roentgenographic features of the disease.

It has been shown that degeneration can occur with diffuse deposition of calcium without evidence of a tear. On the other hand, it is common to find degeneration, inflammation and calcification in the presence of tears. This indicates that bursitis and tears commonly coexist and that the clinical differentiation must be on the preponderance of tendon disruption (internal derangement), which persists, versus inflammation and calcium deposition, which may or may not persist. Histories of repeated attacks of painful shoulder for periods as long as ten to fifteen years are often obtained, but autopsy findings have shown that calcification is rare after sixty-six years of age, whereas cuff tears, without surrounding inflammation, are not uncommon. The basic reason for the reversibility of bursitis as compared with cuff tears is unknown.

It is well known that the relief of pain from an acute attack may spontaneously occur, and although repeated attacks may supervene, the disease is eventually self-limited unless associated with tears that persist. Because of the frequency of spontaneous relief (the actual percentage is unknown), it becomes difficult to evaluate benefits of treatment. The only difference between acute and chronic lesions is the degree and extent of inflammation and the consistence and tension of the material in the deposit.

Treatment can be considered either curative or palliative. In any case one must first determine whether symptoms, by reason of their severity, duration and cause for disability, warrant curative or palliative procedures. The only curative procedure is generally agreed to be operative, and the operation is usually accomplished with a small muscle-splitting incision through the anterior deltoid muscle and evacuation of the calcareous deposits with excision of the degenerated portion of the tendon. A simple sling, mild heat and exercises will then tend to restore the arm to normal; usually within a period of two or three weeks, the pain will have subsided, and within six weeks the motions will be restored.

Palliative procedures are variable and somewhat more difficult to evaluate. The more frequent of these is needling of the lesion under local anesthesia. In needling, an attempt is made to reach the calcareous deposits and remove as much as possible through the needle. This is sometimes facilitated by the use of saline solution to dilute the deposit. X-ray examination, at times, is a helpful guide to be sure that the needle is within the confines of the deposit. Some authors believe that by perforating the tendon overlying the deposit, sufficient material will escape through the puncture wound to effect relief of pain. It seems reasonable that the needling method can in no way rid the tendon of its degenerated area.

Many authors have advised x-ray therapy, the usual dose being approximately 150 r at 8 ma. 200 KV through 1.5 mm. of copper, in addition to 1 mm. of aluminum filter with a 50-cm. target-skin distance. One to three such doses over a period of one week are necessary. All advocates of this method indicate good results in acute bursitis, but the follow-up studies are not of long enough duration and sufficiently detailed to include the time for recovery, the amount of motion gained or the number of calcific deposits eradicated. It therefore remains unsettled whether x-ray therapy actually relieves a greater percentage than if the disease is left to spontaneous recovery. Pelner[9] advises the use of intravenous iron cacodylate as a curative agent.

Ruptures of the Musculotendinous Cuff

Because of the similarity of underlying lesions of the musculotendinous cuff, it is difficult to differentiate tears from bursitis, but certain points should be kept in mind as being helpful. If cases are analyzed for type of pain, residual-motion defects and the course of the complaints, it should be possible to tell one from the other in most cases. It seems reasonable from the foregoing that in the acute stages, diagnosis may be quite impossible. Furthermore, it is quite unnecessary to make an accurate diagnosis in the early phase of rupture because the lesion is an old one to start with, and the treatment will be no more effective if done early than late. This disagrees somewhat with Codman,[1] who insisted that tears should be operated upon from the moment of their diagnosis, preferably in the acute phase. Once the acute phase has passed, the signs in the shoulder will become somewhat clearer. As a rule, there will be no continuous pain, but rather the complaint will be that of discomfort on a certain motion, particularly at a definite point in the arc of that motion.

Upon examination there will be much less limitation of passive motion than would be expected. Scapulohumeral rhythm will be disturbed. Inability to initiate abduction is not a good diagnostic sign because the remaining musculotendinous cuff may exert sufficient depressor effect to enable the deltoid to carry out abduction. Perhaps a better test would be to determine the inability to maintain abduction against resistance, with the arm first in external and then in internal rotation. In this way, the lesion may be more accurately placed in the anterior or posterior quadrant of the musculotendinous cuff. At times, local palpation may reveal a sulcus if the tear is sufficiently large, or there may be a comparatively painless click when the torn portion slides under the acromion. These signs, when present, are helpful but in no way completely diagnostic. At times the diagnosis can be made only by surgical exploration. The only indication for surgery, however, is for pain or disability sufficient to make such a procedure worth while from the patient's point of view.

It is quite generally agreed that the majority of minor tears heal spontaneously under conservative treatment. It is more likely that the minor lesions heal in spite of treatment, and because many do heal, it is wise in any given case to use a therapeutic trial of conservatism. Should the symptoms continue to the point where the patient seeks further treatment, it is generally agreed that the only effective treatment is surgical. The actual surgical attack is about as varied as the number of surgeons describing it.

McLaughlin[5, 7] has described an exposure with the skin incision paralleling the suspender line just lateral to the acromioclavicular joint. The acromion is then osteotomized to give adequate exposure of the shoulder cuff. This has the virtue of avoiding the nerve supply to the deltoid. It has the added advantage of removing the acromion if this is deemed necessary to give the repair more room.

A second approach is the anterior deltoid splitting, which can be enlarged by releasing the upper attachment of the deltoid from the acromion if it becomes necessary. Care must be exerted in the use of this incision to avoid injury to the axillary structures during medial retraction, and occasionally, some of the nerve supply may be lost to the anterior fibers of the deltoid.

In either approach, once exposure has been accomplished, the attention is directed to locating the tear. Most of the time, this will not be difficult if the operator is aware that incomplete tears may not be visible from the surface. In such cases, by creating an opening at the periphery of the cuff in the area under suspicion, the tear can be located. Tears of the rotator cuff are so varied that no two are alike, but in general, they are either transverse near the insertion of the cuff or longitudinal, usually between the tendon of the subscapularis and supraspinatus. It is sometimes difficult to visualize in which direction the initial tear might have started because there is a tendency, with continued use of the shoulder, for the tear to progress and the edges to retract. What appears to be a longitudinal tear may have started as a transverse one.

Once the tear has been visualized, it becomes an individual problem to determine the type of repair. In general, the small tears can be resutured to their original point, especially the transverse variety, by mattress sutures through the bone. The longer retracted tears may require side-to-side repair to avoid tension. Capsular flaps, such as that described by Jones,[3] may be helpful in repairing this type of defect. At times the retraction may be such that end-to-end apposition cannot be obtained, and the torn edge may need transplantation to the head of the humerus at a point more medial than the original insertion. In any event, the postoperative care will be quite similar in all cases, taking into account the amount of repair necessary. Three to six weeks are allowed for tissue healing, and the affected arm is immobilized in a sling. Active exercises are then started, and usually within a period of three months, shoulder motions will be restored. In severe tears such as complete avulsions of the entire cuff, motions will be restored to 50 per cent of normalcy. In some cases, certain authors have advised shoulder fusions for these severe injuries. On this point there is no unanimity, and the solution should remain an individual one in each case.

Periarthritis

Quite apart from bursitis or rotator-cuff tears, a clinical entity that occurs in the shoulder has been discussed by authors such as Tarsy,[10] Wilson,[11] Neviaser[12] and others.[13, 14] Codman[1] referred to this group as tendinitis of the rotators. Wilson described it as periarticular adhesions, and it has been referred to as adhesive capsulitis. The actual cause of this condition is unknown, but because it occurs with such uniformity between the ages of fifty and fifty-five, particularly in women, it is suggestive evidence that there is an underlying endocrine imbalance. Against this hypothesis is the fact that it usually remains localized to one shoulder.

Several points set this lesion apart from other shoulder conditions: upon exploration the subacromial bursa has usually been found uninvolved; tears and calcifications are very infrequent; there has been general fibrosis, which fixed the periarticular structures at their insertions, limiting not only direct shoulder motion but also scapulothoracic motion; there are seldom localized areas of discomfort, but instead, the entire shoulder seems tender and painful; x-ray films, as a rule, show nothing other than decalcification; and there is an absence of traumatic history. In follow-up studies practically all these shoulders become normal within an average period of two years, and certain experiences have led away from surgical treatment. In a follow-up study reported, the rehabilitation period in 34 patients averaged five months. This was accomplished by repeated novocain injections either locally or as block anesthesia combined with repeated careful mild manipulations, as well as daily exercises on the part of patients. In addition to local treatment, particular attention is paid to general therapeutics, correction of endocrine disorders and so forth.

Frozen Shoulder

Throughout the literature, the use of the term "frozen shoulder" carries only the connotation of a shoulder that has lost entirely its active and passive motion. Many conditions have been described as a cause, such as bicipital tenosynovitis, subacromial bursitis, partial and complete ruptures of the rotator cuff and dislocations and elongations of the biceps tendon. Lippmann[15] pointed out that bicipital tenosynovitis is a common cause, and he explored 32 cases of frozen shoulder. All showed inflammatory changes of varying degree in the

biceps tendon and sheath, and only a few showed bursal lesions. Tarsy,[16] on the other hand, tried to separate each of the above conditions as clinical entities, but the symptoms and signs are not clear-cut so that in the present state of knowledge, these diagnoses may apply when the condition does not fit the well known entities. It is also possible that they represent complications or extensions of the inflammatory process accompanying bursitis and cuff tears.

Recurrent Dislocation of the Shoulder

The writings of several authors, including Henderson,[17] Gray,[18] Bost,[19] Wellington,[20] Magnuson,[21] Crosby[22] and others, have been reviewed in an effort to find out if there has been any clarification regarding the causative factor in recurring dislocations of the shoulder. Practically all reiterate Bankart's conception that an injury to the glenoid ligament is an essential factor in allowing dislocations to occur. Magnuson[21] has added the concept that there is a lack of muscle balance, which fails to resist the downward and forward displacement of the head, and hence he has outlined the restoration of this balance by shifting the subscapularis muscle.

The surgical procedures advised for the correction of recurrent dislocations are varied, but in general, the once popular Nicola procedure has lost some favor because the tendon frays off when put to hard usage. There still seems to be a place for the Nicola[23] procedure except in patients who are expected to make vigorous use of their arms. Bankart's operative repair is quite generally accepted. However, it is subject to modifications such as the addition of reinforcing fascia or osteotomy of the glenoid. In general, it seems that there is no selection of choice and that the operator, in each case, must repair what seems necessary after noting the defects present at the time of operation. There are very few adequate follow-up series to help in the selection of operative procedures. In cases followed for more than one year, Henderson[17] reported a 91 per cent cure using his own tenosuspension operation. Shepherd[24] strongly urges the search for loose bodies in each case of repair for recurring dislocations. In old dislocations that are irreducible, Steindler[25] has advised arthrotomy, with replacement of the head and reconstruction of the capsule.

Acromioclavicular Dislocations

There is no unanimity of opinion regarding the diagnosis or treatment of dislocations of the acromioclavicular joint. Most authors, however, agree that dislocations of this joint can be partial, when the acromioclavicular ligaments are torn, or complete, when the coracoclavicular ligaments are torn. In partial dislocation many types of conservative fixation are advocated, such as a modified Lever-type sling by Goldberg,[26] a strap brace advocated by Giannestras[27] and a webbing strap shoulder spica as described by Wolin.[28] No one has presented a good picture of end-results comparing the treated with the untreated partial dislocations. This perhaps accounts for the fact that these many methods of treatment are about equally successful. Only an occasional case of partial dislocation is disabling. Bloom[29] advocates early reduction in all cases and maintenance of reduction by wires to give fixation while the ligaments are going through their primary repair. These wires are removed two months later. Bloom, following this form of treatment, returned 12 men to full military duty, but in his opinion it would take a considerable series of treated versus untreated dislocations to prove that the primary treatment in all cases should be routine wiring. Urist[30] found that conservative treatment led to a stable painless joint in 80 per cent of partial dislocations.

Soule[31] has pointed out how x-ray films may be taken to demonstrate mild or severe acromioclavicular separations. With an anteroposterior roentgenogram of both shoulders taken in the upright position with a 20-pound weight in each hand, widening of the involved joint and elevation of the acromial end of the clavicle will be demonstrated. The mere presence of a demonstrated separation does not preclude surgical treatment unless it in some way interferes with the efficiency of the patient, and there are many reported methods of surgical attack to restore the patient's efficiency. Mumford[32] believes that the clavicle, either as a whole or in part, may be excised without impairment to the shoulder girdle. He recommends excision of the distal 2.5 cm. of the clavicle for painful recurrent separations or for chronic arthritis of the acromioclavicular joint. In his hands, 9 cases resulted in satisfactory function with freedom from pain. Urist[30] agrees that this treatment will give a painless shoulder, but strength will not quite equal that of the normal shoulder.

Other forms of treatment have been discussed toward stabilizing the joint. Birkett[33] reported a repair with fascial strips, and follow-up x-ray studies revealed considerable ossification of the new fascial ligaments; the patient had stability and strength of the shoulder with some limitation of scapular and arm movements. Soule[31] has reported similar ossification as early as twenty-two days after injury. He further states that if ossification has not appeared within six weeks after injury, it was not noted in subsequent examinations. Furthermore, the ossification did not seem to bear any relation to type of treatment or to contribute to any disability but actually might aid in restoring continuity of the damaged ligament.

Miscellaneous Conditions

Much has been written regarding the treatment of injuries about the shoulder joint, especially as an outcome of the experience in World War II. There

is nothing particularly new that does not relate to similar injuries elsewhere. Parnall[34] has reported a reconstruction in 2 cases in which there was gross shell destruction of the shoulder joint. The lack of adequate follow-up study has kept such reports from being instructive, although they are very interesting. Pendergrass[35] has given a discussion of neuroarthropathies as they pertain to the shoulder that well sums up what is presently known regarding such conditions. Camiel[36] has presented an excellent description of the progressive x-ray findings in tuberculosis of the shoulder and has attempted to correlate the x-ray with the clinical findings. He believes that no individual x-ray sign is pathognomonic but that, when the films are taken in progressive sequence, the diagnosis will be apparent. Hendricks[37] has reviewed the scalenus anticus syndrome and reported 4 cases. The point of most importance and interest regarding the shoulder joint is the exclusion of the shoulder in the differential diagnosis by the finding of no tender points and a normal range of motion.

Regarding diseases about the shoulder joint, such as arthritis, sepsis and tumors, there is very little new that is of interest. Smith-Petersen[38] has advised acromioplasty as a surgical procedure in rheumatoid arthritis. This is particularly indicated for removing a source of pain and thereby for allowing freer use of not only scapulohumeral but also scapulothoracic motion.

Rowe and Yee[39] have described a posterior approach to the shoulder joint, and McKeever[40] has covered in detail the problem of amputations and prostheses for the upper extremity.

* * *

In conclusion it should be apparent to all that in the differential diagnosis of painful conditions about the shoulder joint, the examiner must be constantly aware of distant lesions which produce radiation pain to the shoulder. Anyone interested is referred to a discussion of this problem by Bosworth.[41]

References

1. Codman, E. A. *The Shoulder: Rupture of the supraspinatus tendon and other lesions in or about the subacromial bursa.* 513 pp. Boston: Thomas Todd Co., 1934.
2. Inman, V. T., Saunders, J. B. deC. M., and Abbott, L. C. Observations on function of shoulder joint. *J. Bone & Joint Surg.* **26**:1-30, 1944.
3. Jones, L. Complete rupture of supraspinatus tendon: simplified operative repair. *Arch. Surg.* **49**:390-398, 1944.
4. McLaughlin, H. L. Lesions of musculotendinous cuff of shoulder: pathology, course and treatment of calcific deposits. *Ann. Surg.* **124**:354-362, 1946.
5. *Idem.* Lesions of musculotendinous cuff of shoulder: exposure and treatment of tears with retraction. *J. Bone & Joint Surg.* **26**:31-51, 1944.
6. *Idem.* Lesions of musculotendinous cuff of shoulder: differential diagnosis of rupture. *J. A. M. A.* **128**:563-568, 1945.
7. *Idem.* Muscular and tendinous defects at shoulder and their repair. *Am. Acad. Orthop. Surgeons, Lect.* Pp. 343-358, 1944.
8. Howorth, M. B. Calcification of tendon cuff of shoulder. *Surg., Gynec. & Obst.* **80**:337-345, 1945.
9. Gunning, N. S. Lesions of musculo-tendinous cuff of shoulder. *M. J. Australia* **2**:593-595, 1946.
10. Tarsy, J. M. Periarthritis of shoulder joint: classification, pathology and treatment. *New York State J. Med.* **44**:2109-2117, 1944.
11. Wilson, P. D. Painful shoulder. *Brit. M. J.* **2**:1261-1265, 1939.
12. Neviaser, J. S. Adhesive capsulitis of shoulder: pathological findings in periarthritis of shoulder. *J. Bone & Joint Surg.* **27**:211-222, 1945.
13. McInnes, J. D. Periarthritis of shoulder. *Canad. M. A. J.* **55**:131-133, 1946.
14. Steindler, A. Periarthritis of shoulder joint. *J. Iowa M. Soc.* **34**:134-138, 1944.
15. Lippmann, R. K. Bicipital tenosynovitis. *New York State J. Med.* **44**: 2235-2240, 1944.
16. Tarsy, J. M. Bicipital syndromes and their treatment. *New York State J. Med.* **46**:996-1001, 1946.
17. Henderson, M. S. Tenosuspension operation for habitual dislocation of shoulder. *Proc. Staff Meet., Mayo Clin.* **19**:5-10, 1944.
18. Gray, C. Recurrent dislocation of shoulder joint. *M. Press* **211**: 195-199, 1944.
19. Bost, F. C., and Inman, V. T. Pathological changes in recurrent dislocation of shoulder: report of Bankart's operative procedure. *J. Bone & Joint Surg.* **24**:595-613, 1942.
20. Wellington, H. W. Treatment of subcoracoid dislocations. *Connecticut M. J.* **8**:602-604, 1944.
21. Magnuson, P. B. Treatment of recurrent dislocation of shoulder. *S. Clin. North America* **25**:14-20, 1945.
22. Crosby, E. H. Surgical procedure for repair of recurrent dislocation of shoulder joint: preliminary report. *J. Bone & Joint Surg.* **28**: 803-812, 1946.
23. Nicola, T. Recurrent dislocation of shoulder: its treatment by transplantation of long head of biceps. *Am. J. Surg.* **6**:815, 1929.
24. Shepherd, J. A. Loose bodies in shoulder-joint. *J. Roy. Nav. M. Serv.* **32**:168-172, 1946.
25. Steindler, A. Reconstructive surgery following traumatic deformities of upper extremity. *Am. Acad. Orthop. Surgeons, Lect.* pp. 268-279, 1943.
26. Goldberg, D. Acromioclavicular joint injuries: modified conservative form of treatment. *Am. J. Surg.* **71**:529-531, 1946.
27. Giannestras, N. J. Method of immobilization of acute acromioclavicular separation. *J. Bone & Joint Surg.* **26**:597-599, 1944.
28. Wolin, I. Acute acromioclavicular dislocation: simple effective method of conservative treatment. *J. Bone & Joint Surg.* **261**:589-592, 1944.
29. Bloom, F. A. Wire fixation in acromioclavicular dislocation. *J. Bone & Joint Surg.* **27**:273-276, 1945.
30. Urist, M. R. Complete dislocations of acromioclavicular joint: nature of traumatic lesion and effective methods of treatment with analysis of 41 cases. *J. Bone & Joint Surg.* **28**:813-837, 1946.
31. Soule, A. B., Jr. Ossification of coracoclavicular ligament following dislocation of acromioclavicular articulation. *Am. J. Roentgenol.* **56**:607-615, 1946.
32. Mumford, E. B. Dislocation of acromioclavicular joint (operative procedure). *Am. Acad. Orthop. Surgeons, Lect.* pp. 88-91, 1944.
33. Birkett, A. N. Result of operative repair of severe acromio-clavicular dislocation. *Brit. J. Surg.* **32**:103-105, 1944.
34. Parnall, E. Reconstruction of shoulder. *Rocky Mountain M. J.* **43**: 635-637, 1946.
35. Pendergrass, E. P., Gammon, G. D., and Powell, J. H. Rapid development of bone changes in patient with syringomyelia as observed roentgenologically. *Radiology* **45**:138-146, 1945.
36. Camiel, M. R. Tuberculous arthritis of shoulder. *Radiology* **46**:569-572, 1946.
37. Hendricks, W. C. Shoulder and arm pain of scalenus anticus origin. *Pennsylvania M. J.* **49**:615-618, 1946.
38. Smith-Petersen, M. N., Aufranc, O. E., and Larson, C. B. Useful surgical procedures for rheumatoid arthritis involving joints of upper extremity. *Arch. Surg.* **46**:764-770, 1943.
39. Rowe, C. R., and Yee, L. B. K. Posterior approach to shoulder joint. *J. Bone & Joint Surg.* **26**:580-584, 1944.
40. McKeever, F. Upper-extremity amputations and prostheses. *J. Bone & Joint Surg.* **26**:660-669, 1944.
41. Bosworth, D. M. Shoulder pain and disability. *Bull. New York Acad. Med.* **20**:460-468, 1944.

Additional References

Bush, L. F. Dislocations of shoulder. *Am. J. Surg.* **67**:520-523, 1945.

Cubbins, W. R., Callahan, J. J., and Scuderi, C. S. Reduction of old or irreducible dislocations of shoulder joint. *Surg., Gynec. & Obst.* **58**: 129-135, 1934.

Downing, F. H. Simplification of Bankart's capsulorrhaphy for recurrent dislocation of shoulder. *J. Bone & Joint Surg.* **28**:250-252, 1946.

Dyer, J. D. Acromioclavicular injuries. *Mississippi Doctor* **23**: 363-365, 1945.

Dynes, J. B. Subacromial bursitis associated with diseases of nervous system. *Lahey Clin. Bull.* **3**:124-127, 1943.

Eaton, L. M. Neurologic causes of pain in upper extremities, with particular reference to syndromes of protruded intervertebral disk in cervical region and mechanical compression of brachial plexus. *S. Clin. North America* **26**:810-833, 1946.

Gibbens, M. E. Appliance for conservative treatment of acromioclavicular dislocation. *J. Bone & Joint Surg.* **28**:164, 1946.

Guido, F. R. Acute calcified subacromial or subdeltoid bursitis. *California & West. Med.* **60**:69-72, 1944.

Harmon, P. H. Posterior approach for arthrodesis and other operations on shoulder. *Surg., Gynec. & Obst.* **81**:266-268, 1945.

Harris, J. H. Roentgen treatment of acute bursitis of shoulder. *Pennsylvania M. J.* **46**:683, 1943.

Hart, V. L. Immobilization of irreparably injured shoulder joint. *Bull. U. S. Army M. Dept.* **5**:366, 1946.

Kaplan, I. W., and Hawkins, B. L. Infiltration therapy of subacromial bursitis with calcification. *New Orleans M. & S. J.* **98**:123-125, 1945.

Klein, I. Treatment of peritendinitis calcarea of shoulder joint by roentgen irradiation: report of 100 cases. *Am. J. Roentgenol.* **56**:366-375, 1946.

Lambert, R. G., and Horwitz, T. Three instruments designed to facilitate Bankart operation for recurrent dislocation of shoulder. *J. Bone & Joint Surg.* **28**:641-643, 1946.

Lynn, T. A., and Peterson, L. T. Bilateral simultaneous dislocation of shoulders: report of case. *J. Bone & Joint Surg.* **28**:161-163, 1946.

McBride, E. D. Injuries to shoulder. *New Orleans M. & S. J.* **98**:533-541, 1946.

McLaughlin, H. L. Calcific deposits in shoulder. *New York State J. Med.* **44**:2231-2235, 1944.

Myers, O. R. Experience with capsulorrhaphy for recurrent dislocation of shoulder. *J. Bone & Joint Surg.* **28**:253-261, 1946.

Ogilvie, H. Recurrent dislocation of shoulder: Johannesburg staple driver. *Brit. M. J.* **1**:362, 1946.

Quiring, D. P., and Boroush, E. L. Functional anatomy of shoulder girdle. *Arch. Phys. Med.* **27**:90-96, 1946.

Roxo Nobre, M. O., and deAraujo Cintra, R. R. Radiotherapy in Duplay's disease. *Am. J. Roentgenol.* **52**:415-422, 1944.

Smith, A. M. Subacromial dislocation of shoulder. *Brit. M. J.* **2**:694, 1946.

Stewart, R. Acute acromio-clavicular joint dislocation: internal fixation of clavicle and coracoid process of scapula with vitallium screw. *Minnesota Med.* **29**:357, 1946.

Tippett, G. O. Art of orthopaedics: injuries and diseases of shoulder and elbow joints. *Post-Grad. M. J.* **21**:172-176, 1945.

Wilson, C. L., and Duff, G. L. Pathological study of degeneration and rupture of supraspinatus tendon. *Arch. Surg.* **47**:121-135, 1943.

Young, B. R. Roentgen treatment of bursitis of shoulder. *Am. J. Roentgenol.* **56**:626-630, 1946.

Young, H. H. Orthopedic aspects of pain in shoulder and arm. *S. Clin. North America* **26**:834-840, 1946.

Idem. Symposium on pain in shoulder and arm: introduction. *S. Clin. North America* **26**:799, 1946.

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Weekly Clinicopathological Exercises

FOUNDED BY RICHARD C. CABOT

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CASE 34201

PRESENTATION OF CASE

A thirty-two-year-old woman entered the hospital complaining of occipital headache and increasing drowsiness.

Eight years prior to admission a diagnosis of pulmonary tuberculosis was made by x-ray and sputum examination. The patient was treated by artificial pneumothorax for five years, after which the sputum was negative and the disease was thought to be arrested. Sixteen months before entry she began to have steady pain in the left lower quadrant. Two months later an abdominal operation was performed at another hospital, and a "mass of adhesions" was found. No organs were removed. The patient seemed to improve, but six months before admission a mass appeared in the left lower quadrant. This was diagnosed as a pelvic abscess, and was incised and drained at still another hospital. Cultures of the pus were negative. Guinea-pig inoculation was not done. A fecal fistula developed and drained intermittently up to the time of admission. Eight days before admission the patient complained of a heavy feeling in the head, and had a temperature of 102°F. Two days later she developed occipital headache, followed by nausea, increasing drowsiness and diplopia. Her physician found that the temperature was normal, and no neck rigidity was present.

On physical examination the patient was very drowsy, apathetic and slow to answer, but oriented and coherent. The heart and lungs were normal. There was a midline suprapubic scar with a 3 mm. opening discharging small amounts of greenish-brown liquid and soft, solid material, which resembled feces but was odorless. Pelvic examination revealed a moderately tender mass about 12 cm. in diameter, apparently consisting of uterus and adexa matted together. The neck was not stiff, and there was no Kernig sign. The vision, fundi and visual fields were normal. The pupils were 1.5 mm. in diameter and equal, and reacted to light and accommodation. There were no gross ocular palsies, but upward gaze seemed somewhat limited. Convergence was good. There was diplopia on looking in any direction except upward.

One examiner noted slight weakness of the right external rectus muscle. The facial muscles were thought to be slightly less active on the right. Hearing was reported by several different examiners to be diminished on the right, but quantitative tests were not done and Rinne and Weber tests were negative. Other cranial nerves were normal. Motor findings were normal. The tendon and abdominal reflexes were normally active and equal, and plantar reflexes were normal. Sensation was normal.

The temperature was 98.6°F., the pulse 80, and the respirations 20.

Examination of the blood disclosed a hemoglobin of 15 gm. and a white-cell count of 25,000, with 85 per cent neutrophils. The blood nonprotein nitrogen was 23 mg., the total protein 8.12 gm. and the fasting blood sugar 112 mg. per 100 cc. The blood Hinton test was negative. Repeated urine examination and urine cultures were negative. The spinal-fluid pressure was equivalent to 260 mm. of water, with normal dynamics. The fluid contained 64 white cells per cubic millimeter, with 72 per cent lymphocytes, 15 per cent polymorphonuclear leukocytes and 12 per cent monocytes; the total protein was 116 mg. and the sugar 120 mg. per 100 cc., and the chloride 124 milliequiv. per liter. The colloidal-gold wave was 2223333111,

and the Wassermann test was negative. A guinea-pig inoculation was negative.

X-ray study of the chest showed numerous linear areas of increased density in the right upper lobe and, to a slight degree, in the left midlung field. There was no evidence of cavitation. Skull films were normal. An electroencephalogram showed high voltage and slow waves bilaterally, most prominent in the frontotemporal and parietal regions and probably somewhat more marked on the left. Streptomycin was given intrathecally (50,000 units twice a day) and intramuscularly (0.4 gm. every six hours). Penicillin was given intramuscularly (50,000 units every three hours).

During the first week the patient did not improve. The temperature remained normal. Drowsiness and headache became more pronounced. Moderate rigidity of the neck and a positive Kernig sign were present. The margins of the optic disks were slightly blurred. On the sixth and seventh days weakness of the left arm and leg developed. The tendon reflexes were active and equal, and the plantar reflexes were normal. Bilateral occipital burr-hole exploration on the seventh hospital day was negative, and a ventriculogram was normal. The cerebrospinal-fluid pressure remained above 300 mm., and two days later a right subtemporal decompression was performed in an attempt to relieve the increased intracranial pressure. On the next day the left hemiparesis improved, and the right became less drowsy. On the fifteenth hospital day coarse nystagmus on right lateral gaze was observed. This cleared up during the next week. During the next six weeks there was slow improvement, the mental status became normal, and the patient was able to sit in a chair. She complained of slight dizziness, but there was no vertigo. The temperature remained normal. Approximately two months after admission, the patient was able to stand and walk without difficulty. She continued to have mild headaches. The tendon reflexes were very brisk, and there was bilateral ankle clonus, but neurologic examination was otherwise negative. Streptomycin, intrathecally and intramuscularly, and penicillin were given without interruption. During the next few days the area over the subtemporal decompression became tense and bulging. The spinal-fluid pressure rose to over 300 mm., and headache, accompanied by vomiting, increased steadily in severity. Seventy-one days after entry the patient was found dead.

Differential Diagnosis

Dr. Raymond D. Adams*: May we see the x-ray films?

Dr. Stanley M. Wyman: Films of the chest show a rather extensive process involving the right upper lobe, with considerable retraction and collapse of the right upper lobe, the hilus being displaced inward. There is also a linear area of fibrotic density in the left midlung field and the left first interspace. The heart shadow is not remarkable. The diaphragm is symmetrical. The spleen is rather large, within the upper limits of normal in size. One cannot exclude activity in the pulmonary process. Films of the skull, I believe, show the posterior clinoids to be a little sharper than usual, and there is a suggestion that the right posterior clinoid is eroded on two films. Air studies are incomplete and not ideal. They show no gross dilatation or displacement of the ventricular system.

Dr. Adams: There is no evidence of a destructive process in the mastoid region? There is nothing to suggest a tuberculous infection of the medulla or mastoid cells?

Dr. Wyman: No; I think that the mastoid cells are well aerated from the available films. There is no evidence of acute bone destruction or erosion.

Dr. Adams: It seems from the data submitted that we must assume the patient had tuberculosis. This was established by x-ray films of the chest, sputum examination and the later development of a sterile abscess in the pelvis and of a fecal fistula. The pain in the left lower quadrant, which appeared sixteen months before entry, was probably the first manifestation of tuberculous salpingitis. There is no mention of either gastrointestinal or genitourinary symptoms, but since the pain was in the left quadrant, salpingitis is more likely than tuberculous infection of the descending colon. Tuberculosis more often involves the ileum or cecum, and if this had happened, the pain would have been periumbilical or in the right lower quadrant. Moreover, if a tuberculous ulcer had eroded through the bowel wall to give the pelvic abscess that was found later, it should not have been sterile; colon bacilli should certainly have been cultured. I am unable to settle the point whether the pelvic abscess came from the fallopian tube or the bowel.

The symptoms that appeared during the last phases of the illness were clearly neurologic. The occipital headache, drowsiness and nausea are the first indications of this central-nervous-system extension and could be explained by meningeal irritation as in a leptomeningitis or by a space-consuming lesion in the posterior fossa. The cerebrospinal fluid does not entirely decide which of these two mechanisms was operative. There were pleocytosis and elevation of protein, meaning in all probability that there was some localized or diffuse meningeal inflammation, but the elevated blood sugar is against a bacterial infection in the subarachnoid space. With such an infection, the cerebrospinal-fluid sugar would have been low — below 40 mg. per 100 cc. Elevated cerebrospinal-fluid sugar is always related to a high blood sugar, either from diabetes mellitus or, as in this case, with no glycosuria, from injection of glucose intravenously. The cerebrospinal-fluid pressure was

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elevated, and I am therefore inclined to explain at least part of the patient's drowsiness, slowness in response and apathy, as well as the slow waves bilaterally in the electroencephalogram, on the basis of elevated intracranial pressure. In view of the absence of stiff neck and the findings in the cerebrospinal fluid, I assume that there was a local meningeal infection but not a diffuse tuberculous meningitis.

Are there any neurologic findings that give us a clue to the location of this pathologic process? There are. The right abducens muscle was weak, and the patient had diplopia quite early in the illness — before, I should think, it would have developed as a false localizing sign of increased intracranial pressure. The tests of ocular movement are not well worked out, but I suppose that she had a partial right-sixth-nerve palsy. The right-facial-muscle weakness points to involvement of the seventh cranial nerve, and the partial deafness, about which there was some doubt, to the right auditory nerve. Later there were a left hemiparesis, which cleared up after a few days, and nystagmus on looking to the right. All these symptoms indicate a lesion in the lower pons on the right side, probably in the middle cerebellar peduncle, which disturbed the function of but did not directly invade and destroy the right sixth, seventh and eighth cranial nerves in their intrapontine course, the vestibular nuclei and the right corticospinal tract. A slight inco-ordination of the right arm and leg is all that I need to complete the picture for a cerebellopontine lesion. The absence of ataxia, I suppose, means that involvement of the cerebellar peduncles or hemisphere was not extensive. It must be admitted that the left hemiparesis, which disappeared after the right subtemporal craniotomy, could have been due to a lesion in the right internal capsule or posterior part of the frontal lobe. The cranial-nerve palsies would then have been unrelated.

Up to this point I have persuaded myself that the patient had generalized tuberculosis, not miliary, and that the recent development consisted of a tuberculoma in the lateral part of the lower pons or possibly here and in the right frontal lobe, which produced some elevation of intracranial pressure and localized inflammation of the adjacent leptomeninges. I assume that the physicians who were responsible for this woman's care were of the same opinion because they took the trouble to inoculate a guinea pig, which remained healthy, and proceeded to administer streptomycin. The ventriculogram was probably done to obtain more information regarding the locality of the disease and the temporal craniotomy.

Are there any other diseases that could produce this same clinical picture? Yes; two other possibilities must be considered. Torula may be combined with tuberculosis. One of our patients had pulmonary tuberculosis and lymphadenitis, established by biopsy and culture, and then developed a torular infection of the lungs and meninges, which proved fatal. The cerebrospinal-fluid changes are very similar to those in tuberculous leptomeningitis except that the cultures are repeatedly negative for tubercle bacilli and the fungus can be seen or cultured. In the case under discussion the abdominal lesion and the fecal fistula are against torula.

The other possibility is that a mixed bacterial infection developed in a patient who already had tuberculous lesions. Either the lung or the pelvic abscess could have been secondarily infected by other pyogenic bacteria. The brain lesion or lesions would then have been metastatic abscesses. In our pathological material we recently had a case of pulmonary tuberculosis in which there was a subsequent development of hemiplegia and signs of increased intracranial pressure and of meningeal irritation. The neurologic signs were found at autopsy to be caused by a large putrid abscess in the left frontoparietal region. There was a mixed flora of bacteria in the abscess, — fusiform bacilli, spirochetes and an anaerobic streptococcus. I can neither affirm nor deny this possibility in the case under discussion. I suppose that if the cerebrospinal fluid had on repeated examinations contained a normal sugar, one would have had to think seriously of this possibility, but without knowing the subsequent cerebrospinal-fluid findings I would not venture this diagnosis.

Tumor of the lung, with metastases to the brain and other organs, is a remote possibility.

Clinical Diagnosis

Tuberculous meningitis, probable.

Dr. Adams's Diagnoses

Pulmonary tuberculosis.
Generalized tuberculosis, with tuberculous salpingitis.
Fecal fistula.
Tuberculoma, right pons and cerebellar peduncle and ? left frontal lobe.
Tuberculous meningitis.

Anatomical Diagnoses

Pelvic abscess.
Brain abscesses, multiple.
Pulmonary tuberculosis, healed.
Operative wounds — subtemporal decompression, ventriculogram, appendectomy, old.

Pathological Discussion

Dr. Tracy B. Mallory: The systemic findings at autopsy were comparatively few. There was a good-sized tubo-ovarian abscess, and the small

bowel had become adherent to it. There was a closed fistulous tract between the small bowel and the anterior abdominal wall. I think it possible that that fistula never drained. That is perhaps the reason why there was no culture. We could find no evidence of tuberculosis in the walls of the abscess, and the lung showed minimal evidence of tuberculosis — no cavity and only a fibrous scar at the site where the lesion had been, and a little compensatory emphysema.

Dr. Kubik will tell the rest of the findings.

Dr. Charles S. Kubik: At autopsy there were signs of generalized increased intracranial pressure in the form of flattening of the cerebral convolutions, cerebellar pressure cones and enlarged ventricles. There was no visible generalized, subarachnoid exudate over the brain or spinal cord, — not even a definite thickening or cloudiness of the arachnoid membrane, — but there was a prominence of the inferior portion of the right cerebellar hemisphere, which was soft and fluctuant and turned out to be an abscess. Projection of the cerebellum into the foramen magnum — that is, a cerebellar pressure cone — unquestionably caused compression of the medulla and death from respiratory paralysis. There were also small abscesses in the right frontal lobe. All the abscesses had thick capsules, indicating that they had been present for some time, a matter of weeks at least. The cavities were filled with thick, greenish-gray pus. There were no tubercles either in the meninges or in the walls of the abscesses, and tuberculosis can be ruled out by the gross and microscopical findings. Smears were negative, and I was not able to find any organisms in sections of the abscesses or of the meninges.

Dr. Mallory: One anaerobic culture from one of the brain abscesses grew colon bacilli. It is a very unsatisfactory organism to find, since one never knows how to interpret it.

Dr. Kubik: Perhaps more attention should have been paid to the nystagmus, weakness of the sixth and seventh nerves and diminution of hearing, but apparently these signs were not very definite. The only explanation we have for the hemiparesis is the large abscess of the cerebellum pressing against the medulla. I do not believe that the small abscesses in the right frontal lobe could have accounted for the left-sided weakness that was present for a while and later apparently subsided. The abscesses were multiple, unquestionably metastatic, and the only possible source that was found was the infection in the pelvis, though metastatic abscesses of the brain from other regions than the lungs are rare. There were no definite abnormal findings in the spinal meninges, spinal cord or nerves of the cauda equina, resulting from the prolonged use of large quantities of streptomycin.

CASE 34202

Presentation of Case

A twenty-three-year-old man entered the hospital complaining of severe shortness of breath.

He was discharged from the Army one and a half years before entry, when no abnormalities were noted. He was apparently well until three months prior to admission when he began to notice poorly localized and shifting pain in the right side of the chest, without radiation to the shoulders. Soon he began to have profuse night sweats but had no cough, hemoptysis or dyspnea. About three weeks before entry he developed shortness of breath upon exertion. This symptom rapidly increased in severity so that he slept very poorly at night, and he had to sit up in bed to breathe. A physician found fluid in the right side of the chest, and a subsequent thoracentesis produced about "a quart" of bloody fluid. An x-ray film taken after removal of the fluid showed a questionable tumor of the lung. Although the dyspnea was somewhat relieved by the thoracentesis, other symptoms, such as epigastric fullness, anorexia and brief bouts of diarrhea, began to occur. The patient had lost 15 pounds in the two previous months. He denied any contact with tuberculosis.

Physical examination showed a well developed and well nourished man who was mildly dyspneic while sitting up in bed. No superficial lymph nodes were palpable. There was an acneform rash over the chest and back. There was flatness over the lower two thirds of the right lung field, and breath sounds were absent over this area. Coarse breath sounds were heard at the right apex. The left lung was clear to percussion. The rest of the examination was negative.

The temperature was 98°F., the pulse 90, and the respirations 24.

Examination of the blood revealed a red-cell count of 5,120,000, with a hemoglobin of 13.6 gm., and a white-cell count of 17,800, with 74 per cent neutrophils, 22 per cent lymphocytes and 4 per cent monocytes. The urine was normal.

Review of the x-ray films taken at another hospital and those taken on admission showed a massive, right-sided pleural effusion, with a shift of the mediastinum and heart to the left. Bucky films revealed a complete collapse of the right lung, the lateral border of which appeared lobulated. The right main bronchus was seen to a point about 2.5 cm. below the carina, where it ended abruptly. There were several areas of increased circular density, varying in size from 1 to 1.5 cm. in diameter, overlying the collapsed lung and farther out in the region of the eighth rib posteriorly. The diaphragm was not seen on the right. The left lung was well aerated, and no changes were noted in its parenchyma.

On the day after admission an operation was performed.

Differential Diagnosis

Dr. Carroll C. Miller: One immediately jumps to the query, What was the operation performed? It is extremely unlikely, in this hospital at least, that a thoracotomy would be performed on a patient the day after admission unless for an emergency condition. My assumption is that the operation was a bronchoscopy, which should be included as a part of the investigative program.

The highlights of the data given are quickly summarized. In the past history we have a short period of illness. The patient was apparently well on discharge from the Army one and a half years before admission, and the first sign of illness presumably occurred only three months before he was seen here. As a bit of negative evidence he had no contact with tuberculosis. This, of course, may be of equivocal value. In the present illness the salient facts are pain in the right side, night sweats, dyspnea, disturbance of the gastrointestinal tract, with anorexia, epigastric fullness, diarrhea, weight loss, bloody fluid in the chest and the question of a tumor in the lung. Two interesting and probably important negative data are no history of cough and no hemoptysis. When the patient was admitted examination showed signs of fluid in the right side of the chest. There were signs of consolidation or perhaps of transmission of tracheobronchial breath sounds at the right apex. On the unaffected side again there were no palpable lymph nodes. The left lung was clear. The abdominal examination was presumably negative. The laboratory data do not indicate much except a mild hypochromic anemia and a definite leukocytosis without significant elevation of neutrophils. The x-ray films show effusion, an apparently lobulated lung, bronchial obstruction and areas of circular density overlying or perhaps in the right lung. The left lung was normal. May we see the x-ray films?

Dr. Stanley M. Wyman: I am sorry I cannot demonstrate all that the record describes because the most valuable films were those taken immediately after the removal of the fluid. The areas of density described in the lung are not visible on these films. All we can see is a massive effusion with a fluid level at this point and the collapsed rim of upper lobe, which appears to be normal in thickness and contour. There is no appreciable thickening of the pleura in this region. The heart and mediastinum are displaced toward the left. There is a poorly seen area of round density lying behind the heart on the left side, to the left of the spine. I do not believe this is accounted for entirely by the aorta. The patient was a young man, and I would not expect the aorta to have this wide sweep. Recalling the film taken at the other hospital, which I happened to see, I was not impressed by the obstruction to the bronchus described in the record, and I am not too sure that it was a valid finding.

Dr. Miller: Could this line be the left pleura pushed over by a mass in the mediastinum or arising from the right side of the chest?

Dr. Wyman: I think so. The left lung is clear. There is no bony disease on the left. On the right it is impossible to exclude it. The later film shows no defect in the bones. The film taken in the upright position shows air in the pleural cavity, and there is now a suggestion of some thickening of the parietal pleura.

Dr. Miller: From the description of these x-ray films, should I minimize to a certain extent the report about bronchial obstruction seen on the films taken elsewhere and also the areas of circular density?

DR. WYMAN: I would not minimize the latter. I think they were present. There were nodular densities that appeared to be over the surface of the lung rather than actually inside it. I cannot demonstrate them on these films.

DR. MILLER: At any rate, they were clearly seen and may be evidence of extension or metastases from a tumor or some other process outside the primary focus.

Let us analyze the symptoms and signs from a positive standpoint. This patient started out with pain in the right side of the chest. This may have been pleurisy — dry at first. Was this a pleurisy-like pain? The description given in the record does not say. The pain may have been due to invasion of nerve trunks in the mediastinum or chest wall. I cannot explain the shifting nature of the process on the basis of either pleurisy or tumor involvement. It is true that pleurisy very frequently jumps from one place to another but certainly is not likely due to movement of fluid. The patient's dyspnea may have been due to the accumulation of fluid in the right side of the chest or to some degree of bronchial obstruction leading to collapse of the lung on that side. He had a 15-pound weight loss. This may have been caused by infection or a malignant lesion. He had a bloody pleural effusion. Serous effusion due to systemic disease, such as a cardiorenal condition, would not be bloody. If this was an infectious process, the most likely diagnosis is tuberculosis. It is comparatively rare for the ordinary effusion of intrapulmonary tuberculosis to be bloody. The incidence of bloody effusion with tuberculous pleuritis, on the other hand, is notable. Infarction of the lung could have caused a bloody effusion, or irritative factors in the pleural cavity may have accounted for an outpouring of first serum and then blood, particularly an embolus from a malignant tumor. Apparently, at one time at least, there was some degree of bronchial obstruction. If this was so, the obstruction may have been intrinsic, or due to a foreign body. I believe we can throw that out immediately because of the lack of a positive history. Or it may have been intrinsic tumor. Extrinsic pressure from a tumor mass, or intrinsic tumor, might well account for bronchial obstruction. The leukocytosis may have been on the basis of infection, although there was not the usual elevation of the neutrophil count. Necrosis of tumor frequentl causes elevation of the white-cell count.

This case is interesting to me because of the lac of respiratory symptoms, particularly cough. I is unusual to have obstruction of the bronchus whether from intrinsic or extrinsic causes, not ac companied by cough. I should guess that the firs respiratory distress occurred because of pressur of fluid on the lung. What diagnosis, therefore can we entertain? In the first place, we can conside briefly, and let it drop promptly, the matter o vascular anomalies, such as congenital arteriovenou fistula. This probably should have been picke up by previous history and previous x-ray studies These patients invariably have pathognomoni signs, and none were mentioned in the history o physical examination. We may think of parasites such as the echinococcus, or fungi-like actinomycosis but again we do not have fever or signs of irrita tion within the lung. The patient was apparentl well until recently. I feel fairly confident in rul ing out intrapulmonary tuberculosis because o the bloody pleural effusion.

Under the heading of tumors he may have had primary bronchiogenic carcinoma. This patien was a young man, younger than the age group i which we usually find carcinoma of the lung, but i should be considered. Could he have had metastati disease of the lung from some other source? Pos sibly. He had gastrointestinal symptoms; he ma well have had gastric carcinoma. Again, he wa young for that type of disease. Most likely of al the tumors, I believe, is sarcoma, because it occur most frequently in the younger age groups. I be lieve that it is impossible to determine the natur of the sarcoma with the data at hand, but it ma have been fibrosarcoma; it may also have bee neurogenic fibrosarcoma or neuroblastoma. I d not believe that I can go farther than to say tha he had a sarcoma.

We have, then, a young patient with a rapidl progressive disease characterized by pain, bloody pleural effusion and a lesion, which I believe wa a malignant one, and the most likely diagnosis i sarcoma arising in the mediastinal tissues to pro duce pleural irritation and some degree of ob struction to the right main bronchus.

DR. DONALD S. KING: We saw this man in th Thoracic Clinic and now that primary cancer o the pleura has been restored to good standing i

his hospital, we suggested that it might be that. That was one of the guesses raised at that time, — whether it was that type of growth. Lack of actual ung symptoms is one of the things that Dr. Miller as brought out that made us think of that pos- ibility. Whether that would account for the tumor masses I do not know. I do not believe that we aw the films taken elsewhere, or if we did, I have orgotten.

DR. WYMAN: I am sorry we have not got them here to show you because, as I recall, the opinion of the X-ray Department was that the round masses described lay over the surface of the lung and along the parietal pleura. They were areas of round density, and we could not be sure that they were within the lung itself.

DR. KING: It sounds as if they were "consistent with the pleura."

CLINICAL DIAGNOSIS

Pleural endothelioma.

DR. MILLER'S DIAGNOSIS

Sarcoma (of pleura or retropleural tissues).

ANATOMICAL DIAGNOSES

Malignant teratoma of anterior mediastinum, involving pericardium, pleura and right lung.

Hydrohemothorax, right.

Hydrohemopericardium.

Ascites.

PATHOLOGICAL DISCUSSION

DR. TRACY B. MALLORY: The operation mentioned at the termination of the history was a thoracoscopy. Examination of the aspirated fluid failed to show tumor cells, so that a thoracoscopy was done and a biopsy taken.

DR. JOHN G. SCANNELL: Two or three liters of bloody fluid was removed from the chest, and on inserting the thoracoscope one could see many raised, nodular, soft and purplish-blue areas on the parietal and visceral pleura. A biopsy was taken. The lung could not be seen because there was so much bloody effusion, and the visceral pleura could not be identified.

DR. MALLORY: The biopsy specimen that Dr. Scannell provided us with showed a very undifferentiated tumor of relatively small cells, and we were finally persuaded to call it a mesothelioma. I know from long years of experience that that is a diagnosis one should never make and we were wrong once again. We have only 1 case in this hospital that I think may be a mesothelioma, and this is not it.

DR. KING: That is the one you burned me with once before.*

DR. EDWARD D. CHURCHILL: Did the patient have x-ray treatment?

DR. MALLORY: Yes — quite a long course, with essentially no effect. He went steadily downhill and died three or four months after he was seen.

At autopsy we found an extensive tumor within the thoracic cage; both visceral and parietal pleuras on the right were solid masses of tumor, a large mass of tumor lay in the pericardial sac, another mass had invaded the right lung, destroying most of it beyond recognition, and still another mass of tumor was present in the anterior mediastinum. The tumor for the most part was quite soft and hemorrhagic and grossly was not characteristic of anything in particular. Microscopically, however, the diagnosis was immediately obvious. It showed a wide variety of types of tumor tissue, including squamous cells in some areas, gland formation in other places, large areas of endothelial-like tissue, which resemble closely the original biopsy, and in others, sarcoma, so that it was very evident that we were dealing with a teratoma. Teratomas are not uncommon in the chest, starting in the anterior mediastinum, and I think in all probability that was the primary source of this tumor.

*Case Records of the Massachusetts General Hospital (Case 33111). *New Eng. J. Med.* 236:407-414, 1947.

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THE ANNUAL MEETING

THE one hundred and sixty-seventh anniversary of the founding of the Massachusetts Medical Society will be observed at its annual meeting to be held at the Hotel Statler in Boston on May 25, 26 and 27, 1948. The attendance should exceed by a considerable number that of a year ago, when 1521 physicians registered. As has been the case since the program was expanded to occupy three entire days, the meetings of the supervising censors and of the Council will be held on the preceding day, May 24. The entire program is published elsewhere in this issue of the *Journal*.

The general scientific sessions, of which six hav been arranged, will be held each morning and after noon at 9:00 a.m. and 2:00 p.m. A variety of topic will be covered, including medical aspects of th atomic bomb, nuclear fission and its application t medicine, a symposium on diseases of the liver an government propaganda and socialized medicine.

After the annual meeting, to be held at 11:00 a.m on Tuesday, May 25, the annual oration, "Th Responsibility of Medicine in the Propagation o Poor Protoplasm," will be delivered by Dr. Allen S Johnson, visiting physician to the Springfield Hos pital. Following the precedent established last yea by Dr. O'Hara, then president of the Society, th 18 members still in active practice who joined th society in 1898 will be presented at this meetin and will be the guests of the Society at the annua luncheon.

On the evening of May 25 the Shattuck Lecture "Surgery in the Aged," will be delivered by Dr. C Stuart Welch, professor of surgery at Tufts Colleg Medical School and surgeon-in-chief of the Joseph H. Pratt Diagnostic Hospital and the Boston Dis pensary. The seven scientific sections of the Society will hold their luncheon meetings at noon on May 2 and 27.

On Wednesday, May 26, after a preprandial con course in the interests of social adjustment th members of the Society and their wives will assemble for the annual dinner at 7:00 p.m. The speaker o the evening will be Mary Ellen Chase, Ph.D., pro fessor of English Language and Literature at Smith College. Her subject will be "The Country Docto on the Maine Coast."

A special program has been prepared for the wive of fellows attending the meeting. On Tuesday May 25, they will be taken on a bus tour through historic Cambridge, not neglecting the glass flowers, to equally historic Concord, and then on to Way side Inn for lunch. A Pops concert has been ar ranged for that evening, and on the following after noon a tea and fashion show will be given at Filene's.

The men's annual golf tournament is scheduled for the afternoon of Wednesday, May 26, at the Woodland Golf Club.

Not only are all fellows of the Society urged to attend the various sessions of the annual meeting; they are urged also to visit the scientific exhibits, this year increased to fifteen in number, and the eighty-three technical exhibits, not the least of which are to be found in the balconies.

THE CUTTER LECTURE

It is often difficult to administer an endowed lectureship without modifying or losing altogether the original purposes that motivated the donor. Such loss of purpose is frequently glossed over by a statement of progress, which calls attention to the fact that times have changed; times do change, but not so fast or as much as is generally implied by these subterfuges. It is therefore refreshing either to hear or to read a lecture like that of Dr. Haven Emerson, published elsewhere in this issue of the *Journal*.

Here speaks a man whose career has led him down the middle of the road. Beside this road, throughout his lifetime, there have bloomed attractive wayside flowers with which he might have dallied, and there have been on either side inviting woodsy cartpaths where he surely could have strayed and escaped from it all. If he had done so, however, he could not have written this lecture; he would have been a specialist in some subdivision of public health instead of its "general practitioner."

In addition to his qualifications to speak, this lecturer has expressed himself in graceful and at times lofty language. Just as he has effectively quoted Abraham Lincoln and Henry I. Bowditch, so too may future lecturers turn and glean from him incisive statements of our current views — our facts, freedoms and formulas, as well as our fears, frustrations and follies. Our present era may well be looked back upon as a period in which every "subway mole knows the news of good health often before his own physician has been convinced of its authenticity," or in which "daily bulletins come to the press from the hirelings of philanthropy instead of from responsible health officers."

In another vein the lecturer says "we could almost rest upon the record for a spell if some miracle of nice human relations brought us freedom from sneezes as the sanitary privy, clean water and pasteurized milk have spared us from most of the diarrheas and enteritides." Looking into the future: "The very logic and economy of leaving the water of milk at the point of production and replacing it where the milk is consumed will force health departments to permit sale of reconstituted milk and to protect the consumer against its commercial abuse." The largest undertaking of the future, and perhaps the most important in the opinion of the lecturer, is the sanitation of occupations: "The opportunity of health protection appears to me at least as promising in this area as in the two large fields of nutritional and communicable diseases." The sociologist also comes to the surface: "There is no future of promise in any public service that permits or encourages a shift of responsibility for children from the home and the parents into schools and health agencies of government." The modern version of Matthew (**5**:45) appears in the discussion of today's poliomyelitis extravaganza when reference is made to "the zooming airplanes that sprinkle death-dealing dust on house flies and honey bees alike."

This Cutter Lecture contains much more that is quotable and thought-provoking; it is commended to our readers.

WORLD HEALTH REPUDIATED

The failure of Congress to ratify the World Health Organization of the United Nations is reminiscent of its attitude in the last century toward the International Red Cross. At that time the United States and Russia, year after year, were the only major powers that turned thumbs down on one of the greatest humanitarian movements that the world has ever known.

The United States then was through with conflict. It had just fought a civil war and was never again going to resort to arms. It did not need the

Red Cross, nor was it going to become involved in entangling alliances.

In the present instance the Senate has approved participation, and the House Foreign Affairs Committee has given its unanimous approval; it is the House Rules Committee that has tabled the legislation without an explanation.

Two more ratifications were necessary to secure the twenty-six votes needed to make the World Health Organization a full-fledged agency of the United Nations. These have been obtained, but without the leadership of the United States the representation of the western hemisphere will scarcely count. A democracy can at least lead the world in blowing hot and cold with the same breath.

RED CROSS AND THE BLOOD BANKS

ATTENTION is directed to a letter published elsewhere in this issue of the *Journal* from Dr. Lamar Soutter and Dr. Charles P. Emerson, Jr., directors respectively of the blood banks of the Massachusetts General and the Massachusetts Memorial hospitals. If, as expressed in this communication, efforts are being made to interfere with the fullest development of the Red Cross blood-collection program, not only is the health of the public being put in jeopardy, but national security itself may be threatened.

Any program may justly be subject to constructive criticism; the only serious opposition to this particular enterprise comes from organizations that may have cause to fear its competition. These consist largely of local hospital banks, and, as Dr. Soutter and Dr. Emerson state, the hospital banks that they direct have been helped rather than injured by the Massachusetts State bank that has been in existence for two years and will now turn over its functions to the Red Cross.

It is an ambitious program for a time of peace on which the Red Cross has embarked. No one can guarantee or as yet predict its success. The Red Cross, nevertheless, is our accepted national agency for relief in time of distress, local or widespread, and this blood program may logically be construed as falling within its legitimate field of activity. It is the obligation of every citizen, lay or medical, to support it to the limit of its needs.

MEDICOLEGAL ABSTRACT

Regulation of Professional Conduct—Effect of acquittal in criminal case on board's suspension order. In Massachusetts the professions are regulated by one inclusive statute (G. L. [Ter. Ed.] C. 112), which provides for an administrative board empowered to revoke and cancel the certificate and registration of anyone found "guilty of deceit, malpractice, gross misconduct in the practice of his profession, or of any offense against the laws of the commonwealth relating thereto." In the event that a doctor is found "not guilty" by a jury in a criminal proceeding, or "not negligent" in a civil proceeding, is such a finding binding on the board that was not a party in the proceeding? If a doctor commits some offense other than one in the practice of his profession, is he liable to be suspended under the terms of the statute? A recent case involved both problems.

The Board of Dental Examiners revoked the certificate of a dentist and canceled his registration on the ground that in his application for registration he had falsely and with intent to deceive claimed to be a graduate of Montreal College of Dentistry. In a subsequent criminal proceeding under the criminal provisions of C. 112, s. 52, he was tried and acquitted by a jury of the charge of falsely and with intent to deceive claiming to be a graduate of a college granting degrees in dentistry. Fifteen years later he petitioned the Supreme Judicial Court for reversal of the revocation, and his petition was dismissed by a single justice since "for aught that appears there may have been ample evidence before the board in 1932 indicating that the diploma" presented by the petitioner was a forgery.

On appeal the decision was affirmed, for the court construed the term "any offense" to cover not only "misconduct as a dentist" but also "the violation of any law relating to the practice of the profession of dentistry" including laws "relating to admission to that profession." Of the acquittal the court said:

> That fact, in our opinion, does not vitiate the action of the board, for one reason because that action preceded the acquittal in point of time. Furthermore, this is a civil proceeding, while the acquittal was in a criminal proceeding, and the parties to the two proceedings are different.

(*Giroux* v. *Board of Dental Examiners*, 76 N. E. [2d] 758, 1948.)

MASSACHUSETTS MEDICAL SOCIETY

DEATH

LAMBERT — Frederick D. Lambert, M.D., of Tyngsboro, died on April 20. He was in his seventy-first year.

Dr. Lambert received his degree from Boston University School of Medicine in 1900 and from Harvard Medical School in 1901. He was a former president of Middlesex North District Medical Society and had been a member of the Council of the Massachusetts Medical Society since 1927.

His widow, four sons, two brothers and eight grandchildren survive.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

COMMUNICABLE DISEASES IN MASSACHUSETTS FOR MARCH, 1948

RÉSUMÉ

DISEASES	MARCH 1948	MARCH 1947	SEVEN-YEAR MEDIAN
Chancroid	4	3	2*
Chicken pox	2405	3063	1604
Diphtheria	21	72	19
Dog bite	867	790	769
Dysentery, bacillary	9	9	4
German measles	119	112	316
Gonorrhea	215	295	327
Granuloma inguinale	0	0	0*
Lymphogranuloma venereum	1	0	2*
Malaria	7	8	8
Measles	4205	1795	3126
Meningitis, meningococcal	6	2	21
Meningitis, Pfeiffer-bacillus	2	4	4
Meningitis, pneumococcal	2	2	3†
Meningitis, staphylococcal	0	0	0†
Meningitis, streptococcal	1	1	1†
Meningitis, other forms	0	0	0†
Meningitis, undetermined	8	8	6†
Mumps	2522	1174	1349
Pneumonia, lobar	145	172	369
Poliomyelitis	0	2	2
Salmonellosis	4	15	8
Scarlet fever	706	564	1457
Syphilis	226	364	462
Tuberculosis, pulmonary	241	367	248
Tuberculosis, other forms	29	14	20
Typhoid fever	1	1	2
Undulant fever	4	7	5
Whooping cough	241	645	853

*Four-year median.
†Six-year median.

COMMENT

Diseases with incidence above the seven-year median are chicken pox, diphtheria, bacillary dysentery, measles and mumps.

Diseases with incidence below the seven-year median are German measles, malaria, lobar pneumonia, salmonellosis, scarlet fever, typhoid fever, undulant fever and whooping cough.

Diphtheria is declining but the number of cases is still higher than in eight out of the ten previous years. Lobar pneumonia is at the lowest level ever reported; scarlet fever is at the lowest prevalence, except for three years, since 1918; and whooping cough continues to make new low records.

Only twice in the past has the number of cases of chicken pox exceeded the number reported in March of this year. Measles is at the highest prevalence since 1943, and mumps at the highest since 1945.

GEOGRAPHICAL DISTRIBUTION OF CERTAIN DISEASES

Diphtheria was reported from: Boston, 11; Brockton, 1; Dedham, 1; Duxbury, 1; Malden, 1; Medford, 1; Quincy, 1; Revere, 3; Somerville, 1; total, 21.

Dysentery, bacillary, was reported from: Boston, 1; Marblehead, 2; Melrose, 1; Worcester, 5; total, 9.

Encephalitis, infectious, was reported from: Lexington, 1; North Attleboro, 1; Somerville, 1; Worcester, 1; total, 4.

Malaria was reported from: Amherst, 1; Ludlow, 1; Medford, 3; Saugus, 1; Stoneham, 1; total, 7.

Meningitis, meningococcal, was reported from: Boston, 2; Fitchburg, 1; Newton, 1; Pittsfield, 1; Quincy, 1; total, 6.

Meningitis, Pfeiffer-bacillus, was reported from: Amesbury, 1; Everett, 1; total, 2.

Meningitis, pneumococcal, was reported from: Holden, 1; Holyoke, 1; total, 2.

Meningitis, streptococcal, was reported from: Lowell, 1; total, 1.

Meningitis, undetermined, was reported from: Arlington, 1; Franklin, 1; Revere, 1; Springfield, 1; Templeton, 2; Winchendon, 1; Worcester, 1; total, 8.

Salmonellosis was reported from: Auburn, 1; Falmouth, 1; Somerville, 1; Worcester, 1; total, 4.

Septic sore throat was reported from: Boston, 4; Everett, 1; total, 5.

Trichinosis was reported from: Cambridge, 3; Danvers, 2; Fall River, 1; Medford, 1; Somerville, 1; total, 8.

Typhoid fever was reported from: Fall River, 1; total, 1.

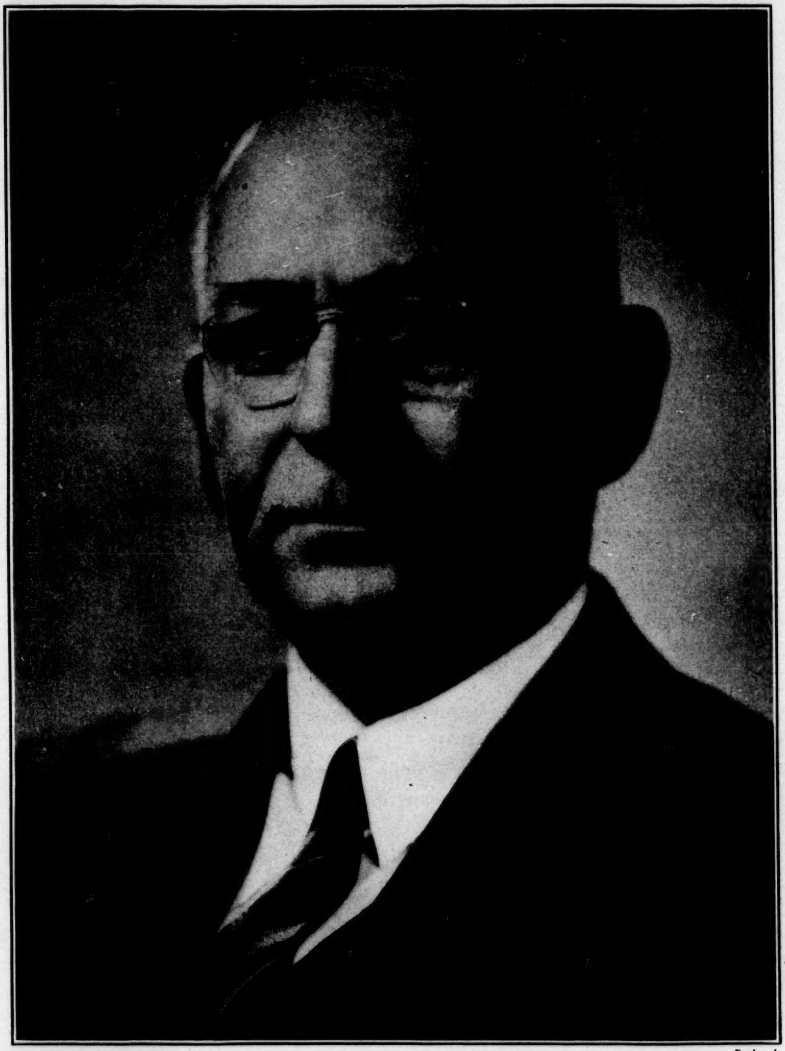
Undulant fever was reported from: Acton, 1; Bridgewater, 1; Dudley, 1; Medway, 1; total, 4.

LABORATORIES APPROVED FOR PREMARITAL AND PRENATAL BLOOD TESTS

The annual evaluation of the performance of laboratories doing diagnostic and serologic tests for syphilis has been completed. The laboratories now on the list approved for premarital and prenatal blood tests are as follows:

LOCATION	LABORATORY
Boston	Boston Dispensary
	Boston Health Department
	Commonwealth Clinical Laboratory
	Leary Laboratory
	Massachusetts General Hospital
	Massachusetts Memorial Hospitals (G. I. D. Clinic)
	State Wassermann Laboratory
Brockton	Brockton Health Department
Brookline	Sias Laboratory (Brooks Hospital)
Clinton	Clinton Hospital
Fall River	Union Hospital
Fitchburg	Burbank Hospital
Great Barrington	Fairview Hospital
Holyoke	Holyoke Hospital
	Providence Hospital
Lowell	Lowell General Hospital
Montague City	Farren Memorial Hospital
New Bedford	Clinical Laboratory
	St. Luke's Hospital
Newton	Newton-Wellesley Hospital
North Adams	North Adams Hospital
Pittsfield	St. Luke's Hospital
	House of Mercy Hospital
Salem	Salem Hospital
Springfield	Mercy Hospital
Tewksbury	State Infirmary and Hospital
Westfield	Noble Hospital
Worcester	St. Vincent Hospital
	Worcester City Hospital
	Worcester Health Department

OFFICERS OF THE MASSACHUSETTS MEDICAL SOCIETY, 1947-1948



Bachrach

DR. DANIEL B. REARDON, *President-Elect*

PROGRAM OF THE ONE HUNDRED AND SIXTY-SEVENTH ANNIVERSARY OF THE MASSACHUSETTS MEDICAL SOCIETY

Monday, Tuesday, Wednesday and Thursday, May 24, 25, 26 and 27, Hotel Statler, Boston

The Registration Desk will be located on the Mezzanine Floor, and all who attend the meeting are requested to register.

MONDAY AFTERNOON, MAY 24

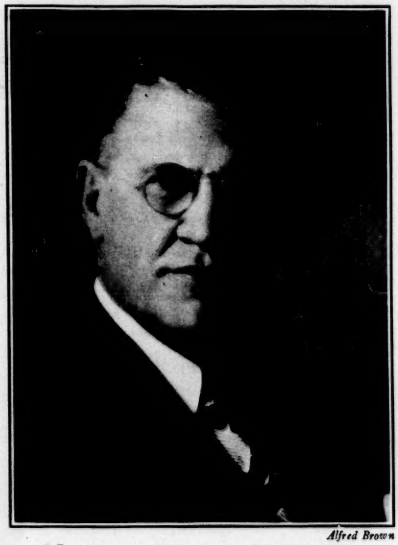
4:00 **Committee on Membership** (PARLOR C).

4:30 **Supervising Censors' Meeting** (PARLOR C).

6:00 **Cotting Supper for Councilors** (PARLORS A AND B).

Blackstone

DR. EDWARD P. BAGG, *President*



Alfred Brown

DR. CHARLES J. KICKHAM, *Vice-President*

MONDAY EVENING, MAY 24

7:00 **Annual Meeting of the Council** (GEORGIAN ROOM).

TUESDAY MORNING, MAY 25

First General Session

GEORGIAN ROOM

DR. DWIGHT O'HARA, *Chairman*
DR. FREDERICK S. HOPKINS, *Co-chairman*

9:05 *A Motion Picture Entitled "Purposeful Splinting Following Injuries to the Hand."* With a discussion by DRS. SUMNER L. KOCH, MICHAEL L. MASON AND HARVEY S. ALLEN.

9:30 *Treatment of the Anemias.* DR. WILLIAM DAMESHEK, Boston. Professor of clinical medicine, Tufts College Medical School; hematologist, Joseph H. Pratt Diagnostic Hospital.

9:55 *The Relationship between the Industrial Physician and the Family Doctor.* DR. THOMAS L. SHIPMAN, Manchester. Instructor in industrial medicine, Harvard School of Public Health; consultant in industrial medicine, Salem Hospital; clinical assistant in medicine, Massachusetts General Hospital.

10:20 *Medical Aspects of the Atomic Bomb.* DR. SHIELDS WARREN, Boston. Director, division of biology and medicine, Atomic Energy Commission; pathologist, New England Deaconess Hospital, New England Baptist Hospital and Pondville State Hospital for Cancer.

11:00 **Annual Meeting of the Massachusetts Medical Society** (GEORGIAN ROOM).

Annual Oration (following annual meeting): The Responsibility of Medicine in the Propagation of Poor Protoplasm. DR. ALLEN S. JOHNSON, Springfield. Visiting physician, Springfield Hospital.

Annual Luncheon (PARLORS A, B AND C): tickets must be procured in advance of the meeting.

TUESDAY AFTERNOON, MAY 25

Second General Session

GEORGIAN ROOM

DR. W. RICHARD OHLER, *Chairman*
DR. LEWIS M. HURXTHAL, *Co-chairman*

2:00 *Hormonal Alteration of Cancer.* DR. IRA T. NATHANSON, Boston. Assistant professor of surgery, Harvard Medical School; associate visiting surgeon, Massachusetts General Hospital; assistant surgeon, Pondville State Hospital for Cancer.

2:25 *Operations for Post-traumatic and Post-infectious Epilepsy.* DR. JAMES C. WHITE, Boston. Assistant professor of surgery, Harvard Medical School; chief of neurosurgical service, Massachusetts General Hospital.

2:50 *Nutrition in the Practice of Medicine.* DR. NORMAN JOLLIFFE, New York City. Chief, Nutrition Clinic, Department of Health of the City of New York.

3:15 *The Significance of Rehabilitation in Medicine.* SIR REGINALD WATSON-JONES, London, England. Orthopedic surgeon to H. M. George VI; surgeon-in-chief, Royal Air Force.

3:40 *Recent Concepts Regarding the Spread and Treatment of Poliomyelitis.* DR. ROBERT B. LAWSON, Winston-Salem, North Carolina. Associate professor of pediatrics, Bowman Gray School of Medicine.

4:05 *Military Medical Preparations for the Future.* WILLIAM S. STONE, Colonel, M.C., U.S.A., Research and Development Board, Medical Department, United States Army.

TUESDAY EVENING, MAY 25

GEORGIAN ROOM

8:00 **The Shattuck Lecture.** Surgery in the Aged. DR. C. STUART WELCH, Boston. Professor of surgery, Tufts College Medical School; surgeon-in-chief, Joseph H. Pratt Diagnostic Hospital and Boston Dispensary.

WEDNESDAY MORNING, MAY 26

Third General Session

GEORGIAN ROOM

DR. CHARLES J. KICKHAM, *Chairman*
DR. ROY J. HEFFERNAN, *Co-chairman*

9:00 *A Motion Picture Entitled "Subdural Hematoma."* With a discussion by DR. RUDOLPH JAEGER.

9:25 *Evaluation of Certain Laboratory Tests.* DR. DAVID SKINNER, Boston. Instructor in pathology, Boston University School of Medicine; pathologist, Newton-Wellesley Hospital.

9:50 *Transplantation of the Cornea.* DR. BRENDAN D. LEAHEY, Lowell. Instructor in ophthalmology, Harvard Medical School; ophthalmic surgeon, St. John's Hospital, Lowell General Hospital and St. Joseph's Hospital; assistant surgeon, Massachusetts Eye and Ear Infirmary.

10:15 *Nuclear Fission and Its Application to Medicine.* ROBLEY D. EVANS, Belmont. Professor of physics, Massachusetts Institute of Technology; consultant in biophysics, Peter Bent Brigham Hospital.

10:40 *Problems Associated with Prolonged Labor.* DR. LUKE GILLESPIE, Brookline. Assistant in obstetrics and gynecology, Harvard Medical School; assistant obstetrician, Boston Lying-in Hospital.

11:05 *The Use of Modern Drugs in the Treatment of Asthma.* DR. FRANCIS C. LOWELL, Concord. Associate professor of medicine, Boston University School of Medicine.

11:30 *Rice Diet in Hypertension.* DR. ANDREW W. CONTRATTO, Brookline. Assistant in medicine, Harvard Medical School; associate physician, Peter Bent Brigham Hospital; physician to Hygiene Department, Harvard University.

WEDNESDAY NOON, MAY 26

Section Meetings and Luncheons

12:00 M. — 2:00 P.M.

Section of Medicine

PARLOR A

DR. FRANCIS C. HALL, Boston, *Chairman*
DR. LAURENCE B. ELLIS, Boston, *Vice-chairman*
DR. ALLEN S. JOHNSON, Springfield, *Secretary*

Recent Advances in Hormone Therapy. DR. GEORGE W. THORN, Boston. Physician-in-chief, Peter Bent Brigham Hospital.

Section of Pediatrics

PARLOR B

DR. LEWIS WEBB HILL, Boston, *Chairman*
DR. GERALD N. HOEFFEL, Boston and Cambridge, *Secretary*

Surgical Problems in Pediatric Practice. DR. THOMAS H. LANMAN, Boston. Clinical professor of surgery, Harvard Medical School; surgeon, The Children's Hospital.

Section of Radiology

PARLOR C

DR. HUGH F. HARE, Boston and Newton, *Chairman*
DR. ALBERT M. MOLONEY, Boston and West Roxbury, *Secretary*

Atomic Energy and Cancer. DR. EDITH H. QUIMBY, New York City. Associate professor of radiology, College of Physicians and Surgeons, Columbia University.

WEDNESDAY AFTERNOON, MAY 26

Fourth General Session

GEORGIAN ROOM

DR. WILLIAM B. CASTLE, *Chairman*
DR. STANLEY J. G. NOWAK, *Co-chairman*

2:00 *Lobotomy: Indications and Results.* DR. JAMES L. POPPEN, Brookline. Member, Department of Neurosurgery, Lahey Clinic.

2:25 *Geriatrics.* Dr. Robert T. Monroe, Brookline. Senior associate in medicine, Peter Bent Brigham Hospital.

Symposium on Liver Diseases

Dr. Charles S. Davidson, *Presiding*

2:50 **Introduction.** Dr. Franklin W. White.

3:00 *Liver-Function Tests.* Dr. Henry G. Kunkel, New York City. Associate physician to the Hospital of the Rockefeller Institute for Medical Research.

3:25 *Viral Hepatitis.* Dr. John R. Neefe, Philadelphia. Associate in medicine, University of Pennsylvania School of Medicine; National Research Council Senior Fellow in the Medical Sciences.

3:50 *Newer Therapeutic Measures in Cirrhosis of the Liver.* Dr. Thomas C. Chalmers, Cambridge, Assistant in medicine, Harvard Medical School; outpatient physician, Boston City Hospital; junior physician, Mt. Auburn Hospital, Cambridge.

4:15 *Physiologic and Pathologic Variations in Hepatic Blood Flow.* Dr. Stanley E. Bradley, New York City. Assistant professor of medicine, Columbia University College of Physicians and Surgeons.

4:40 *Question-and-Answer Period.*

WEDNESDAY EVENING, MAY 26

5:00 **Cocktail Party** (Salle Moderne)

Tickets must be procured in advance.

7:00 **Annual Dinner of the Massachusetts Medical Society** (Georgian Room).

Presiding:
Dr. Edward P. Bagg, president, Massachusetts Medical Society.

Guest Speaker:
Mary Ellen Chase, Ph.D., Professor of English Language and Literature, Smith College, Northampton, Massachusetts. The Country Doctor on the Maine Coast.

Ladies may be invited to attend the dinner.

Tickets for the dinner *must* be procured in advance of the meeting.

THURSDAY MORNING, MAY 27

Fifth General Session

Georgian Room

Dr. John J. Poutas, *Chairman*
Dr. Claude E. Welch, *Co-chairman*

9:00 *A Motion Picture Entitled "Surgical Treatment of Hypertension."* With a discussion by Dr. Reginald H. Smithwick.

9:25 *Use of Radioactive Iodine in Hyperthyroidism.* Dr. Earle M. Chapman, Brookline. Instructor in medicine, Harvard Medical School; associate physician, Massachusetts General Hospital.

9:50 *Operative Morbidity — Whose Responsibility?* Dr. Meyer Saklad, Providence, Rhode Island. Chief, Department of Anesthesiology, Rhode Island Hospital, Providence.

10:15 *Restaurant Sanitation and the Health Department.* Dr. Alfred L. Frechette, director of public health, Brookline.

10:40 *Water Pollution in Massachusetts.* Gordon M. Fair, Cambridge. Professor of sanitary engineering, Harvard Graduate School of Engineering and School of Public Health.

11:05 *Medical Aspects of Arthritis.* Dr. Walter Bauer, Waban. Associate professor of medicine, Harvard Medical School; physician, Massachusetts General Hospital.

11:30 *Surgical Management of Arthritis.* Dr. John G. Kuhns, Boston. Chief of orthopedic service, Robert B. Brigham Hospital.

THURSDAY NOON, MAY 27

Section Meetings and Luncheons

12:00 M. — 2:00 P. M.

Section of Surgery

Salle Moderne

Dr. George S. Reynolds, Pittsfield, *Chairman*
Dr. Robert E. Gross, Boston, *Secretary*

Use and Abuse of Blood and Blood Derivatives. Dr. Louis K. Diamond, Boston. Assistant professor of pediatrics, Harvard Medical School; visiting physician, Children's Hospital. With a discussion by Dr. Lamar Soutter.

Section of Obstetrics and Gynecology

Parlor A

Dr. Arthur T. Hertig, Boston and Winchester, *Chairman*
Dr. James F. Conway, Brookline and Roslindale, *Vice-chairman*
Dr. Daniel McSweeney, Milton, *Secretary*

The Endometrium Associated with Ectopic Pregnancy. Dr. Duncan E. Reid, Boston. Richardson Professor of Obstetrics, Harvard Medical School.

Section of Dermatology and Syphilology

Parlor C

Dr. Austin W. Cheever, Boston, *Chairman*
Dr. Maurice M. Tolman, Chelsea, *Secretary*

The Pigmented, Hairy and Warty Nevi and Their Relation to Malignancy. Dr. Eugene F. Traub, New York City. Professor of dermatology, University of Vermont College of Medicine; formerly, clinical professor of dermatology and syphilology, New York Post-Graduate Hospital, Columbia University.

Section of Anesthesiology

Parlor B

Dr. Urban H. Eversole, Boston, *Chairman*
Dr. Morris J. Nicholson, Boston, *Secretary*

The Present and Future Status of Cyclopropane. Dr. Emery A. Rovenstine, New York City. Professor of anesthesia, New York University College of Medicine; director, Department of Anesthesiology, Bellevue Hospital.

THURSDAY AFTERNOON, MAY 27

Sixth General Session

GEORGIAN ROOM

DR. JOHN FALLON, *Chairman*
DR. GEORGE S. REYNOLDS, *Co-chairman*

2:00 *Rubella and Congenital Defects.* DR. CONRAD WESSELHOEFT, Boston. Clinical professor of infectious diseases, Harvard School of Public Health.

2:25 *Endometriosis.* DR. INGLIS F. FROST, New York City. Chief of Endocrine Clinic, Women's Hospital.

2:50 *Cutaneous Malignancies and Nevi.* DR. EUGENE F. TRAUB, New York City. Professor of dermatology, University of Vermont College of Medicine; formerly, clinical professor of dermatology and syphilology, New York Post-Graduate Hospital, Columbia University.

3:15 *The Practical Importance of the Rh Factor.* DR. LOUIS K. DIAMOND, Boston. Assistant professor of pediatrics, Harvard Medical School; visiting physician, Children's Hospital; director, Blood Grouping Laboratory.

3:40 *The Management of Surgical Pain.* DR. EMERY A. ROVENSTINE, New York City. Professor of anesthesia, New York University College of Medicine; director, Department of Anesthesiology, Bellevue Hospital.

4:05 *Government Propaganda and Socialized Medicine.* HON. FORREST A. HARNESS, member of Congress, Fifth District, Indiana.

4:30 *Unexpected Death of Persons Not Suffering from Recognizable Disease.* DR. ALAN R. MORITZ, Boston. Professor of legal medicine, Harvard Medical School; pathologist-in-chief, Peter Bent Brigham Hospital.

SCIENTIFIC EXHIBITS

BOOTH

81 — SPINDLE-CELL TUMORS OF THE GASTROINTESTINAL TRACT.
Sponsor: Department of Roentgenology, Massachusetts General Hospital.
Exhibitors: Dr. William L. Pallazzo and Dr. Milford S. Schulz.

METHODS OF REDUCTION AND FIXATION FOR FRACTURES OF THE JAW.
Sponsor: Massachusetts General Hospital.
Exhibitor: Dr. Kurt Thoma.

82 — EPILEPSY: ETIOLOGY AND TREATMENT.
Sponsor: The Seizure Unit, The Children's Medical Center.
Exhibitors: Dr. William G. Lennox and associates.

83 — CORONARY HEART DISEASE.
Sponsor: Departments of Medical Research and Pathology, Beth Israel Hospital.
Exhibitors: Dr. Monroe J. Schlesinger, Dr. Herrman L. Blumgart and Dr. Paul M. Zoll.

PERITONEAL IRRIGATION FOR THE TREATMENT OF ACUTE RENAL FAILURE.
Sponsor: The Surgical Department, Beth Israel Hospital.
Exhibitors: Dr. Howard A. Frank, Dr. Jacob Fine and Dr. Arnold M. Seligman.

84 — PHOTOGRAPHIC EXHIBIT OF ACTIVITIES IN A FORMULA ROOM.
Sponsor: Boston Lying-in Hospital.

85 — VENOUS CATHETERIZATION OF THE HEART.
Sponsor: Peter Bent Brigham Hospital.
Exhibitors: Dr. Lewis Dexter and Dr. Merrill C. Sosman.

86 — A DIRECT TEST FOR THE STUDY OF ASTHMA.
Sponsor: Allergy Clinic of the Evans Memorial and the Massachusetts Memorial Hospitals.
Exhibitors: Dr. Francis C. Lowell and Dr. Irving W. Schiller.

87 — DETECTION OF RADIOACTIVE MATERIAL.
Sponsor: Laboratory of Pathology and Radiation Department, New England Deaconess Hospital.

Exhibitors: Russell F. Cowing and Charles K. Spalding.

PATHOLOGY OF RESECTED LUNGS.
Sponsor: Laboratory of Pathology and Thoracic Service, New England Deaconess Hospital.
Exhibitors: Dr. Richard H. Overholt and Dr. William A. Meissner.

88 — POLYPS OF THE COLON AND RECTUM.
Sponsor: Lahey Clinic.
Exhibitors: Dr. Richard B. Cattell and Dr. Neil W. Swinton.

89 — CARCINOMA IN SITU OF THE CERVIX AND ENDOMETRIUM.
Sponsor: Free Hospital for Women.
Exhibitors: Dr. Paul A. Younge and Dr. Arthur T. Hertig.

90 — RHEUMATOID ARTHRITIS, ITS MEDICAL AND ORTHOPEDIC CARE.
Sponsor: Robert B. Brigham Hospital.
Exhibitors: Dr. Theodore B. Bayles and Dr. Theodore A. Potter and associates.

91 — REPAIR OF CLEFT LIPS.
Sponsor: Plastic Division of the Department of Surgery, The Children's Hospital.
Exhibitor: Dr. Donald W. MacCollum.

BALCONY

203 — HEART DISEASE IN THE PRODUCTIVE AGES — FOREMOST PUBLIC-HEALTH CHALLENGE.
Sponsor: Massachusetts Heart Disease Study of the Massachusetts Department of Public Health, Harvard Medical School and the United States Public Health Service.
Exhibitors: Dr. Vlado A. Getting, Dr. Lewis C. Robbins and Dr. Gilcin F. Meadors.

206 — UROLOGICAL CASE STUDIES
Sponsor: Urological Department, Mount Auburn Hospital and Department of Surgery, Tufts College Medical School.
Exhibitors: Dr. Harold A. Chamberlin and Dr. Joseph Fischmann.

TECHNICAL EXHIBITS

1948

	BOOTH NO.
Abbott Laboratories	56
Alkalol Company	22
Ames Company, Inc.	42
Atlantic X-Ray Company	E & F
Ayerst, McKenna & Harrison, Ltd.	19
Baker Laboratories	31
Chester A. Baker, Inc.	54
Best Foods, Inc.	76
Bilhuber–Knoll Corporation	34
The Borden Company	33
Brewer & Company, Inc.	4 & 5
Brown and Connolly, Inc.	57-A
Buffington's, Inc.	41
Burroughs Wellcome & Company, Inc.	24
Cambridge Instrument Company	79
Camel Cigarettes	11 & 12
Carnation Company	A
Certified Milk Producers Association	60
Ciba Pharmaceutical Products, Inc.	38
Coca-Cola Company	13 & 14
Crosbie–Macdonald	46
Davies, Rose & Company, Ltd.	40
F. A. Davis Company	210
Denver Chemical Manufacturing Company	73
Doho Chemical Corporation	58
Dy-Dee Service, Inc.	10
Electro-Surgical Appliance Corporation	209
J. H. Emerson Company	39
C. B. Fleet Company	43
General Electric X-Ray Corporation	47 & 48
Gerber Products Company	80
J. E. Hanger, Inc.	35
Hanovia Chemical & Manufacturing Company	52
Harper X-Ray Sales Company	61
Harrower Laboratory, Inc.	202
Hoffmann–La Roche, Inc.	29
Kelly–Koett X-Ray Company	1
Kenmore Pharmacy, Inc.	208
H. W. Kinney & Sons, Inc.	2
George Laben	30
Lederle Laboratories Division	6
Eli Lilly and Company	17
J. B. Lippincott Company	7
M & R Dietetic Laboratories, Inc.	16
E. F. Mahady Company	B, C & D
McIntosh Electric Corporation	55
McNeil Laboratories, Inc.	77
Mead Johnson & Company	44 & 45
Medical Clearing Bureau, Inc.	59
Medical Protective Company	9
William S. Merrell Company	70
National Dairy Products Company, Inc.	3
National Drug Company	12-A
T. J. Noonan Company	25
E. L. Patch Company	15
Parke, Davis & Company	51
Pet Milk Company	74 & 75
Philip Morris & Company, Ltd.	49
Picker X-Ray Corporation	69
Pitman–Moore Company	72
Professional Equipment and Hospital Supply Co.	57
L. & B. Reiner	20 & 21
Sanborn Company	8
Sandoz Chemical Works, Inc.	37
Saratoga Springs Authority	204
Schering Corporation	65
G. D. Searle & Company	71
Sharp & Dohme, Inc.	50
Smith, Kline and French Laboratories	36
Spencer, Inc.	62
E. R. Squibb & Sons	78
Surgeons and Physicians Supply Company	63
Swift & Company	32
Tailby–Nason Company	18
U. S. Vitamin Corporation	23
Vanta Company	62-A
Vaponefrin Company	66
Westinghouse Electric Corporation	67 & 68
White Laboratories, Inc.	27 & 28
Winthrop–Stearns, Inc.	53
Wyeth, Inc.	64
F. E. Young & Company	26

ANNUAL GOLF TOURNAMENT

WOODLAND GOLF CLUB

NEWTON, MASSACHUSETTS

WEDNESDAY AFTERNOON, MAY 26

1:00 p.m.

DR. HENRY W. GODFREY, Newton, *Chairman*

MISCELLANY

BRISTOL NORTH DISTRICT MEDICAL SOCIETY

At the annual meeting of the Bristol North District Medical Society held at the Taunton Inn on April 15, the need of communities being "covered" for medical emergencies was discussed. It was proposed that this problem be handled by individual cities and towns and that reports be presented at the next meeting.

The establishment of a district woman's auxiliary was approved.

Mr. Charles J. Dunn discussed malpractice from the point of view of an attorney.

W. E. DAWSON, *Secretary*

MASSACHUSETTS TRUDEAU SOCIETY

At the annual meeting of the Massachusetts Trudeau Society, held in Boston on April 14, the following officers were elected to serve for the term of one year: president, Dr. Donald S. King; vice-president, Dr. Theodore L. Badger; and secretary-treasurer, Dr. Edward J. Welch.

CORRESPONDENCE

RED CROSS BLOOD COLLECTION PROGRAM

To the Editor: Recently, many of us in the field of blood banking have been greatly concerned by the efforts of certain persons to sabotage the Red Cross blood-collection program.

We believe that doctors everywhere should realize the importance of the Red Cross effort, both locally and nationally. If it succeeds, it will mean free blood available in large quantities when needed; it will mean free blood in small hospital areas where heretofore transfusions were often impossible; and last but not least, it will mean an adequate mechanism for blood collection and distribution in case of enemy attack.

There is a fear by some that their blood banks will be engulfed by the Red Cross. In Massachusetts, we have had an

excellent state bank in operation for two years, recently taken over by the Red Cross. We have been greatly assisted by this bank, not engulfed by it. The Red Cross intends to maintain this bank's high standards, and has avowed that there will be no interference with established banks. The criticism has been made that the Red Cross program is a step toward socialized medicine. Do those who make this statement realize that, in case of war, if there is no voluntary organization of this sort to collect and distribute blood, the government will establish its own banking system? Lastly, certain persons have stated that the Red Cross program cannot succeed. We do not know whether it can or not, but we do know that it has made a good beginning and that the benefits to be derived in the care of patients make it worth while for all of us to give it our unqualified support. With that backing, its chances of being successful should be greatly enhanced.

LAMAR SOUTTER
Director of Blood Bank
Massachusetts General Hospital

CHARLES P. EMERSON, JR.
Director of Blood Bank
Massachusetts Memorial Hospitals

MORE ON WHITE CROSS

Dr. Channing Frothingham's letter, published in the *Journal* of May 6, was referred to Dr. Elmer S. Bagnall, whose comments are as follows:

To the Editor: The first paragraph of Dr. Frothingham's letter states that this is the first request from a representative of the Massachusetts Medical Society for information about White Cross. On the contrary, as president-elect of the Massachusetts Medical Society, I made identical suggestions at the Twentieth Century Club, on March 8, 1945, with Dr. Allan M. Butler and Dr. Nathaniel W. Faxon participating and the present Governor Bradford presiding.

The president of the Massachusetts Medical Society in 1939 was Dr. Channing Frothingham. If, as the ex-officio chairman of the Public Relations Committee, he does not seem to recall now the sequence of facts, the records of that committee, which then handled all these matters for the Society, will substantiate my statements. I was secretary of the Public Relations Committee at that time.

I have known and liked Dr. Frothingham since our days together at Camp Devens. I recall vividly how energetically we of the committee discussed the plans that were later known as the Blue Shield and the White Cross, as well as other proposals. I remember too that enabling legislation for both these plans was adopted almost simultaneously. So far as Dr. Frothingham's attitude was concerned, I stand by the statement quoted from my article.

Subsequent discussion in the letter suggests that I had untruthful motives. Those of you who know me, know better. Perhaps I did not make it clear enough that such experimental plans as the White Cross could illuminate the path of those carrying responsibility for plans now operating so that they would not repeat misjudgments in purpose or timing. The Blue Shield carries on but needs to be constantly cautious in its evolution. As a director of Blue Cross I can say that more and better use of available information about rough roads by all concerned would have saved us recent unhappy experiences. It is unfortunate that there are too many people in this country who would welcome failure of the Blue Cross and Blue Shield plans.

Also, I want to state with proper emphasis that although the Massachusetts Medical Society did not endorse and adopt the White Cross as its own, the next president, Dr. Walter Phippen, and the Society leaned backward not even to seem to be critical of it. The records of the Public Relations Committee will support this statement. I was still its secretary and well remember that some White Cross press reports seemed to want the public to believe the contrary.

Finally, if the White Cross plan was so well adapted to the needs of the people and met its demise only from the depletion of its ranks with war, I hope that now it will be resumed and contribute to everyone's objective — better medical care for more people.

ELMER S. BAGNALL, M.D.
281 Main Street
Groveland, Massachusetts

BOOK REVIEWS

Aphasia: A guide of retraining. By Captain Louis Granich, with an appendix in collaboration with Sergeant George W. Pangle. 8°, cloth, 108 pp. New York: Grune and Stratton, 1946. $2.75.

During the war cerebral injury gave rise to a considerable number of patients who were handicapped by speech defects, particularly aphasia, but were otherwise in good health. The matter was given consideration by the United States Army Medical Corps as early as April, 1945, and a technical bulletin was issued. The author has had practical experience in training aphasic patients at one of the large hospitals established in this country. He based his work largely on the previous investigations of J. M. Nielsen and Kurt Goldstein. In his brief manual he gives the basic findings in cases of dysarthria, including aphasia, and outlines a method of rehabilitation that he has found successful. The book is of value particularly as it gives in some detail actual experiences in handling patients with this type of disability.

Communal Sick-Care in the German Ghetto. By Jacob R. Marcus, Ph.D., Adolph S. Ochs, Professor of Jewish History, Hebrew Union College. 8°, cloth, 335 pp. Cincinnati: The Hebrew Union College Press, 1947. $2.50.

The author presents a detailed study of Jewish communal care — the action of the Jewish community and its accredited agencies — in providing medical services in the German lands of the late medieval period. The region covered is roughly the Holy Roman Empire — primarily, Germany and the Hapsburg lands. However, frequent reference is made to Polish and even to English institutions, since the German or Ashkenacite rite was found or prevailed in these areas. No attempt has been made to investigate the Sephardic or Spanish-Jewish institutions in North Germany, Holland and England. The term "medieval" as used in this work refers to the period from about 1500 to 1800. The term "ghetto" is used in its broadest sense as a synonym for the Jewish quarter — the self-contained, legally recognized Jewish community of the sixteenth to the nineteenth century.

The work is divided into a number of chapters. The first discusses direct communal care of the sick. Then follow chapters on the origin, structure and operation of the Hebra Kaddisha (Holy Brotherhood), women's societies for the care of the sick, Jewish youth movements in Europe in the eighteenth century, the Hekdesh or Jewish hospital and the beginnings of the modern Jewish hospital. A number of appendixes contain reproductions of early documents and historical material supplemental to the text. A good index concludes the volume.

The material is well organized. The volume is a credit to the printers. The publishing is excellent. A good large type on soft, light paper makes reading a pleasure. This scholarly work should be in all history collections, medical and general.

Office Treatment of the Eye. By Elias Selinger, M.D. 8°, cloth, 542 pp., with 67 illustrations. Chicago: The Year-Book Publishers, Incorporated, 1947. $7.75.

This well written volume contains 67 illustrations and 526 pages of text arranged in sixteen chapters, grouped under chemotherapy, foreign bodies, ocular injuries, refraction, ocular muscles, lacrimal apparatus, orbit, eyelids, conjunctiva, cornea, sclera, lens and vitreous, glaucoma, uveal tract, retina, optic nerve and appendix.

The author recognizes the wide latitude in opinion about the efficacy of therapy, and he draws upon 160 cited authorities, as well as his own clinical experience, to set down helpful suggestions for the reader. The book deserves a place on the shelf of the practitioner, whether he be a general practitioner or ophthalmologist, because it makes accessible the therapeutic measures of proved worth of yesterday, as well as the promising measures of today.

The work lends itself to minor criticism from the point of view of the ophthalmologist. Since more than half the procedures recommended by the author require hospitalization, the title of the book should omit the word "office," and thus be contracted to "Treatment of the Eye." The first and most prominent chapter is devoted to chemotherapy, which appears again and again in subsequent chap-

ters of the book. Although chemotherapy has its indications, it also has its contradications, and one must be wise in selecting the therapeutic agent in terms of greatest effectivity and least hazard. The author's statement in his preface, as well as his method of approach in the text itself, implies that he is trying to steer a middle course — to serve the general practitioner and the ophthalmologist alike. To serve the former, the text would have to teach anatomy, physiology, pathology, pharmacology and clinical diagnosis, before considering therapeutics. The truth is that skill in diagnosis and treatment cannot be vicariously obtained, but that it is the reward won by penetrating contacts with patients over the years.

Dr. Kirkbride and his Mental Hospital. By Earl D. Bond, M.D. 8°, cloth, 163 pp., with 7 illustrations. Philadelphia: J. B. Lippincott Company, 1947. $3.50.

This book is a biography of Dr. Kirkbride and a history of the Pennsylvania Hospital for the insane. The first part is devoted to the early life of the doctor, who was born in 1809 and died in 1883, his early education at Quaker schools, his medical years at the University of Pennsylvania, his years of early practice and his turn to psychiatry in 1840. The second part concerns the history of the hospital, in its original building from 1841-1859 and in the second building finished in 1859; Dr. Kirkbride designed the second building after ideas original to him. At least thirty-one states built hospitals on his plan. He embodied his ideas and observations on the care of the insane in a book entitled *Hospitals for the Insane*, published in Philadelphia in 1854 and 1880 by the J. B. Lippincott Company. The doctor's life was filled with trials and tribulations because of his advanced ideas, but he weathered all attacks. The hospital was never his chief concern; he was more interested in the patient as an individual. The biography is written in an easy, narrative style. It is well published and should be in all medical history collections.

Diagnosis in Daily Practice: An office routine based on the incidence of various diseases. By Benjamin V. White, M.D., and Charles F. Geschickter, M.D. 8°, cloth, 693 pp., with 360 illustrations and 104 tables. Philadelphia: J. B. Lippincott Company, 1947. $15.00.

An internist and a pathologist, happily teamed, have pooled their teaching experience in producing this well integrated work on diagnosis in daily practice. It is a good book — somewhat heavy in style, but in several respects novel in approach and organization. The volume is extraordinarily compact: even the lining pages in the front and at the end are utilized. In the former there is a list of the major causes of death and disability in the United States prepared from the vital statistics of the Census Bureau and the National Health Survey, so as "to bring them to the medical consciousness." In the latter there is a list of major abnormalities "to be sought on routine examination, together with supplementary procedures to be undertaken in the presence of routine findings," and with references to the pages in which they are discussed.

The authors stress greatly what they term "presymptomatic medicine." It lies midway between preventive and therapeutic medicine, aiming at the recognition of abnormalities of structure or function, which may be the basis of subsequent disability or disease and which may be only incidental to the examination for a current illness or to a periodic health examination. Thus the physician examining the patient for a respiratory disease may discover some precancerous lesion of the skin. This phase of medicine has been made possible by newly acquired knowledge of the precursors or early stages of disease whose association with the fully developed forms was not previously recognized.

The book is richly illustrated by 360 unusually enlightening diagrams, tables and photographs in black and white and in color in a total of 700 pages. This is a notable pedagogic contribution. Many of the illustrations are credited to the Massachusetts General Hospital.

There are five parts: the diagnostic survey, including a section on statistical methods; diagnosis of abnormal symptoms; diagnosis of abnormal physical findings; laboratory procedures; and major diseases. The last part, which is exhaustive, considers diseases of the sensory organs, of the female reproductive organs and of the peripheral, vascular and central nervous systems and the psychoses. There is even a section, the final one, on office arrangement and equipment, which, the authors hold, may influence the character of the physician's work.

On the whole this is a worth-while reference work for the advanced student and the practitioner.

The increasing practice of printing important material on the lining papers of the binding of a volume cannot be too severely criticized. The papers become defaced and soiled from use and are lost in rebinding.

The Practical Nurse. By Dorothy Deming, R.N. 8°, cloth, 370 pp. New York: The Commonwealth Fund, 1947. $3.00.

This is not a textbook of practical nursing but a comprehensive treatise on the need, usefulness and supervision of practical nurses in the home, in general and special hospitals, in industry and public health and in federal institutions. There are special chapters on training, supervision and legislation. To each chapter is appended a list of references for further reading. The appendixes include lists of textbooks and instruction outlines, approved schools of practical nursing (ten in Massachusetts, the second largest number in the country), and opinions concerning state licensure of practical nurses. The author believes that there is a need and future for the practical nurse but that there should be mandatory legislation to protect the public and the nursing profession. A definite long-range plan is formulated for the training, utilization and protection of the practical nurse. The text is well written, and the material well organized. The publication is excellent, well up to the high standard of the Commonwealth Fund. The volume is recommended for all medical and general libraries.

BOOKS RECEIVED

The receipt of the following books is acknowledged, and this listing must be regarded as a sufficient return for the courtesy of the sender. Books that appear to be of particular interest will be reviewed as space permits. Additional information in regard to all listed books will be gladly furnished on request.

Emotional Maturity: The development and dynamics of personality. By Leon J. Saul, M.A., M.D., associate professor of psychiatry, Temple University School of Medicine, and special lecturer in psychiatric information, Bryn Mawr College. 8°, cloth, 338 pp. Philadelphia: J. B. Lippincott Company, 1947. $5.00.

Amiable Autocrat: A biography of Dr. Oliver Wendell Holmes. By Eleanor M. Tilton, Ph.D. 8°, cloth, 470 pp. New York: Henry Schuman, 1947. $5.00.

Medicine. By A. E. Clark-Kennedy, M.D., F.R.C.P., physician to the London Hospital and dean of the medical school. Volume I. *The patient and his disease.* 8°, cloth, 383 pp. Baltimore: Williams and Wilkins Company, 1947. $6.00.

Sexual Behavior in the Human Male. By Alfred C. Kinsey, Sc.D., professor of zoology, Indiana University; Wardell B. Pomeroy, research associate, Indiana University; and Clyde E. Martin, research associate, Indiana University. 8°, cloth, 805 pp., with 173 illustrations and 162 tables. Philadelphia: W. B. Saunders Company, 1948. $6.50.

Psychopathology and Education of the Brain-Injured Child. By Alfred A. Strauss, psychoeducational consultant, Evanston, Illinois, and president, Cove Schools for Brain-Injured Children, Racine, Wisconsin; and Laura E. Lehtinen, psychoeducational consultant, Evanston, Illinois, and educational director, Cove Schools for Brain-Injured Children, Racine, Wisconsin. 8°, cloth, 206 pp., with 46 illustrations. New York: Grune and Stratton, 1947. $5.00.

NOTICES

ANNOUNCEMENTS

Dr. J. Dellinger Barney announces the removal of his office to 412 Beacon Street, Boston.

Drs. M. Leopold Brodny and Daniel Rosen announce the removal of their offices to 636 Beacon Street, Boston, for the practice of urology.

HARVARD MEDICAL SCHOOL CLASS OF 1898

The fiftieth anniversary reunion and dinner of the Harvard Medical School Class of 1898 will be held at the Harvard Club of Boston, 374 Commonwealth Avenue, Boston, on Friday, June 11, at 7:00 p.m.

Members of the Class who intend to be present should notify the Harvard Medical Alumni Office, Harvard Medical School.

SOUTH END MEDICAL CLUB

A meeting of the South End Medical Club will be held at the headquarters of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston, on Tuesday, May 18, at 12 m.

Dr. Wyland F. Leadbetter will speak on the subject "The Diagnosis and Treatment of Infections of the Genitourinary Tract."

Physicians are cordially invited to attend.

BOSTON GASTROENTEROLOGICAL SOCIETY

A meeting of the Boston Gastroenterological Society will be held in the New Cheever Amphitheater, of the Boston City Hospital, Dowling Building, Boston, at 12 noon on Wednesday, May 19. Dr. Frank H. Lahey will speak on the subject "Carcinoma of the Large Bowel, Ulcerative Colitis and Terminal Ileitis."

MASSACHUSETTS PHYSICIANS' ART ASSOCIATION

An exhibition of works of art by members of the Massachusetts Physicians' Art Association will be held in Room 409, Hotel Statler, throughout the annual meeting of the Massachusetts Medical Society, May 25 to 27, from 9 a.m. to 5 p.m.

NEW ENGLAND HEART ASSOCIATION

The annual Henry Jackson Lecture, under the auspices of the New England Heart Association, will be given by Dr. André Cournand, associate professor of medicine, College of Physicians and Surgeons, Columbia University, in the Boston Medical Library, Boston, at 8:15 p.m. on Monday, May 24. His subject will be "Recent Developments in the Study of the Pulmonary Circulation in Chronic Pulmonary Diseases."

A short business meeting will precede the lecture. Interested physicians and medical students are invited to attend.

ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES

The annual meeting of the Association of Military Surgeons of the United States will be held in San Antonio, Texas, from November 10 to 13, and not in Atlantic City, New Jersey, on May 4 and 5, as previously announced in the *Journal*.

AMERICAN COLLEGE OF RADIOLOGY

The annual meeting of the American College of Radiology will be held at the Sheraton Hotel, Chicago, on Sunday, June 20. A dinner in honor of former presidents of the College and a commemoration of the fiftieth anniversary of the discovery of radium will be features of the meeting.

RESIDENCIES IN PSYCHIATRY

Residencies in psychiatry are available at the Veterans Administration Hospital, Roanoke, Virginia. Training will be given at the hospital under the supervision of the Department of Psychiatry, University of Virginia School of Medicine. A three-year program approved by the American Medical Association will include didactic and clinical instruction in all phases of psychiatry and basic neurology. Residents will also actively participate in methods and technics of treating psychiatric patients.

Applications should be addressed to the manager, Veterans Administration Hospital, Roanoke 17, Virginia.

POSITIONS OPEN IN VETERANS ADMINISTRATION HOSPITALS

The Chief Medical Director of the Veterans Administration has recently announced a new program regarding specialty practice in Veterans Administration hospitals. The program will apply to graduates who have completed three years of formal training at other institutions and wish to complete the qualifications of their specialty boards through supervised practice in their chosen specialties as full-time Veterans Administration employees. This program has already been approved by the boards in medicine, surgery and neuropsychiatry.

The present plan, which has been made possible by the termination of the appointments of some 1400 to 1500 ASTP and V12 physicians by July 1, applies particularly to hospitals that are not located in cities where teaching institutions are now connected with the Veterans Administration. All the supervising consultants, however, will be connected with medical schools.

This program appears to offer an unusual opportunity for young men to demonstrate their ability and to gain unusual experience in a chosen field. Application should be made to the nearest Veterans Administration Branch Office. These are to be found in the following cities: Boston, New York City, Philadelphia, Richmond, Atlanta, Columbus, Chicago, St. Paul, St. Louis, Dallas, Seattle, San Francisco and Denver.

MEDICAL AND SURGICAL SUPPLIES FOR PALESTINE

Because of the extreme need for medical and surgical supplies for the care of wounded Jews in Palestine, the Greater Boston Medical Society is sponsoring a drive for the following articles: surgical instruments of all types: penicillin; streptomycin; syringes of all sizes; needles of all sizes; bandages; and gauze pads. Cash contributions for the purchase of such supplies will also be welcomed; checks should be made payable to the Greater Boston Medical Society and mailed to Dr. Bernard I. Goldberg, 481 Beacon Street, Boston. Any supplies contributed should be delivered to Dr. Goldberg, to Dr. David Davis, 416 Marlborough Street, Boston, or to the Brookline Hadassah Office, 251 Harvard Street (Room 7), Brookline.

SOCIETY MEETINGS AND CONFERENCES

Calendar of Boston District for the Week Beginning Thursday, May 20

Thursday, May 20

12:00 m. Clinical Staff Meeting. Nurses' Home, Allerton Hospital, Brookline.

Friday, May 21

*9:00–10:00 a.m. Problems Relating to Bacterial Resistance. Dr. Tom Fite Paine, Jr. Joseph H. Pratt Diagnostic Hospital.

*10:00 a.m.–12:00 m. Medical Staff Rounds. Peter Bent Brigham Hospital.

Monday, May 24

*12:00 m. Clinicopathological Conference. Margaret Jewett Hall, Mt. Auburn Hospital, Cambridge.

*8:15 p.m. New England Heart Association. Boston Medical Library.

(*Notices concluded on page xvii*)